C-58-206-A00/MG-000

ESL-IM368

CONTROL-INDICATOR C-5320/GRD-503 (DFS-7D)

INSTRUCTIONS FOR INSERTING CHANGE PAGES

Replace the pages listed below:

iii and iv
1-0 thru 1-8
2-1 and 2-2
3-1 thru 3-8
4-1 and 4-2
4-7 and 4-8
4-19 and 4-20
4-37 thru 4-40
4-43 and 4-44
5-5 and 5-6
5-9 and 5-10
5-15 and 5-16
6-5 thru 6-10
6-13 and 6-14
6-17 and 6-18
6-21 and 6-22
6-25 thru 6-28
6-31 and 6-32
6-37 thru 6-42
6-45 thru 6-58
6-61 thru 6-74
7-3 thru 7-10
7-15 and 7-16
7-23 thru 7-26
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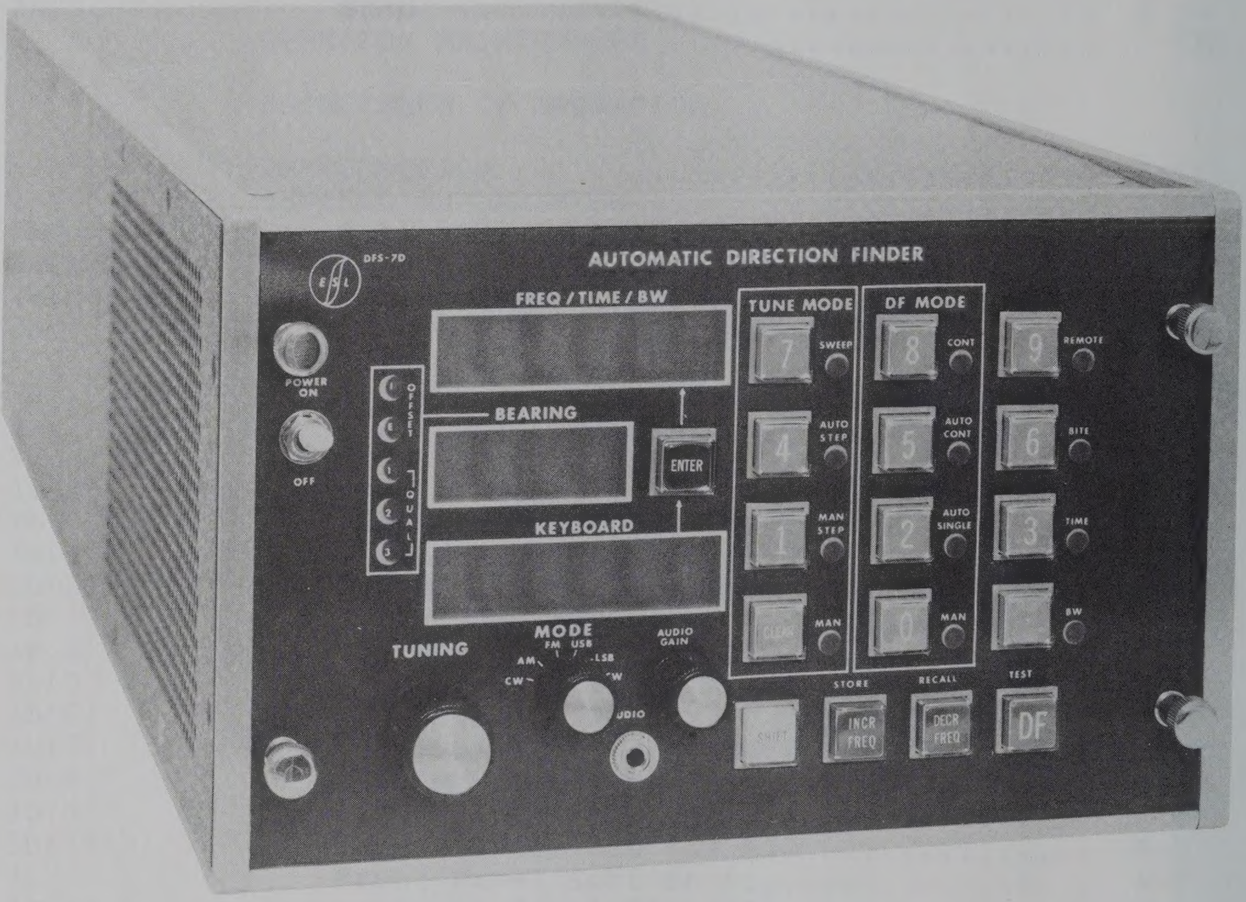

DFS-7D
ESL
AUTOMATIC DIRECTION FINDER
FREQ / TIME / BW
BEARING
KEYBOARD
ENTER
POWER ON
OFF
OFFSET
QUAL
TUNE MODE
DF MODE
7
SWEEP
8
CONT
9
REMOTE
4
AUTO STEP
5
AUTO CONT
6
BITE
1
MAN STEP
2
AUTO SINGLE
3
TIME
CLEAR
MAN
0
MAN
BW
TUNING
MODE
AM
FM
USB
LSB
CW
AUDIO GAIN
STORE
RECALL
TEST
SHIFT
INCR FREQ
DECR FREQ
DF

Figure 1-0. Control-Indicator C-5320/GRD-503

CHAPTER 1

DESCRIPTION OF EQUIPMENT

1-1. SECURITY CLASSIFICATION. The Control-Indicator C-5320/GRD-503 (figure 1-0) and this technical manual are unclassified. However, in use, the equipment assumes the classification of companion equipment or data being processed and/or stored.

1-2. PURPOSE AND CAPABILITIES. The Control-Indicator C-5320/GRD-503, hereinafter referred to as the C-5320, is a microprocessor-based direction finding (DF) controller that is used in a direction finder system. The C-5320 is used to determine and display line-of-bearing (LOB) data to a radio emitter that is transmitting in the VHF band. Front panel controls permit an operator to tune the receiver and control DF operations. Receiver frequency and LOB data are displayed on front panel readouts. The LOB can also be displayed on a graphic display oscilloscope.

The C-5320 is capable of operating as either a master station or remote station. A C-5320 operating as a master station may control as many remote stations as desired. Receiver control data and DF data are transmitted from the master station to the remote stations over a voice-quality communications link. Remote station LOB data may be read by an operator and transmitted back to the master station via a separate land or radio communications link.

1-3. TECHNICAL CHARACTERISTICS. The following paragraphs contain physical, electrical, and environmental data for the C-5320.

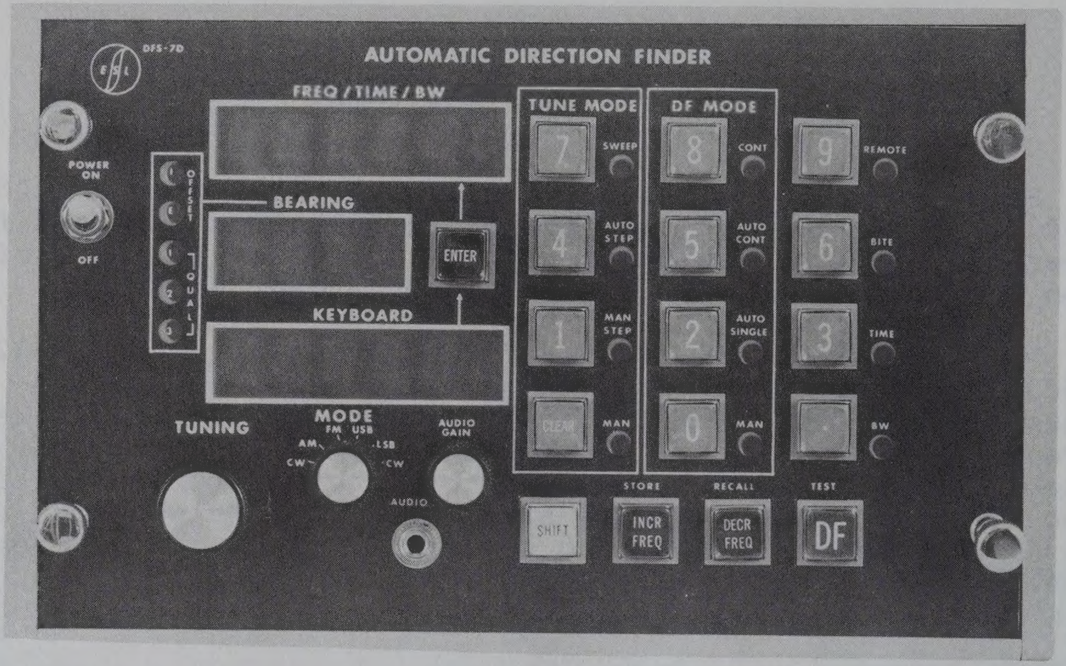
a. Physical Characteristics. The front and rear views of the C-5320 are shown in figure 1-1. Top and bottom views are shown in figures 1-2 and 1-3, respectively. The physical characteristics are listed in table 1-1.

b. Electrical Characteristics. The electrical characteristics of the C-5320 are listed in table 1-1.

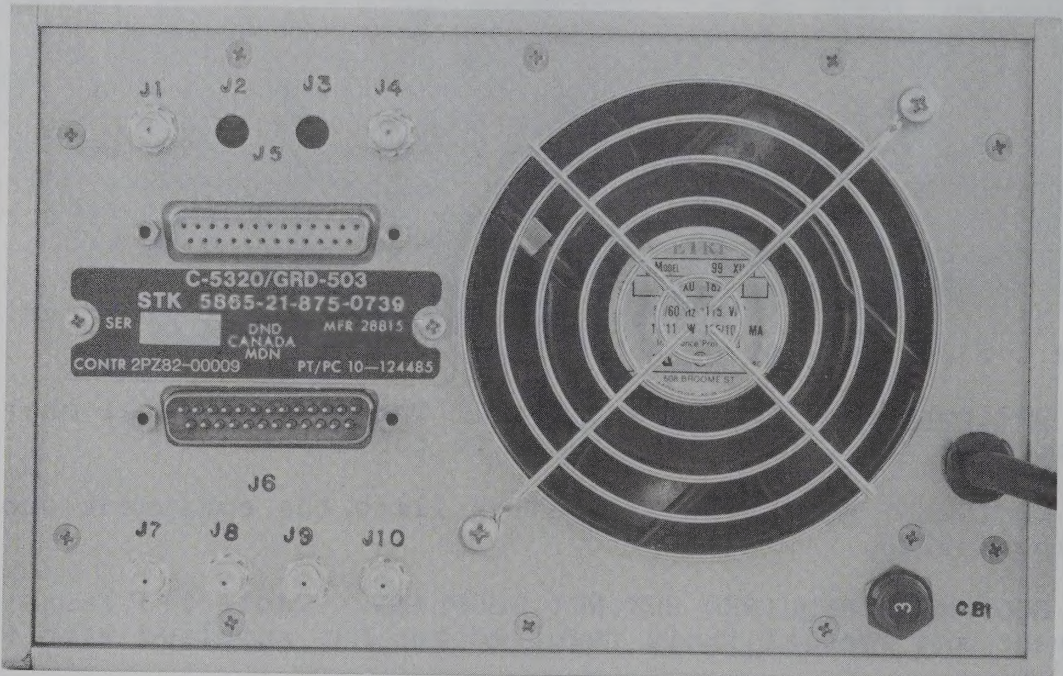
c. Environmental Characteristics. The environmental characteristics of the C-5320 are listed in table 1-1.

1-4. EQUIPMENT SUPPLIED. Table 1-2 lists the equipment supplied with the C-5320.

1-5. EQUIPMENT REQUIRED BUT NOT SUPPLIED. Table 1-3 lists the equipment and special tools required but not supplied with the C-5320.

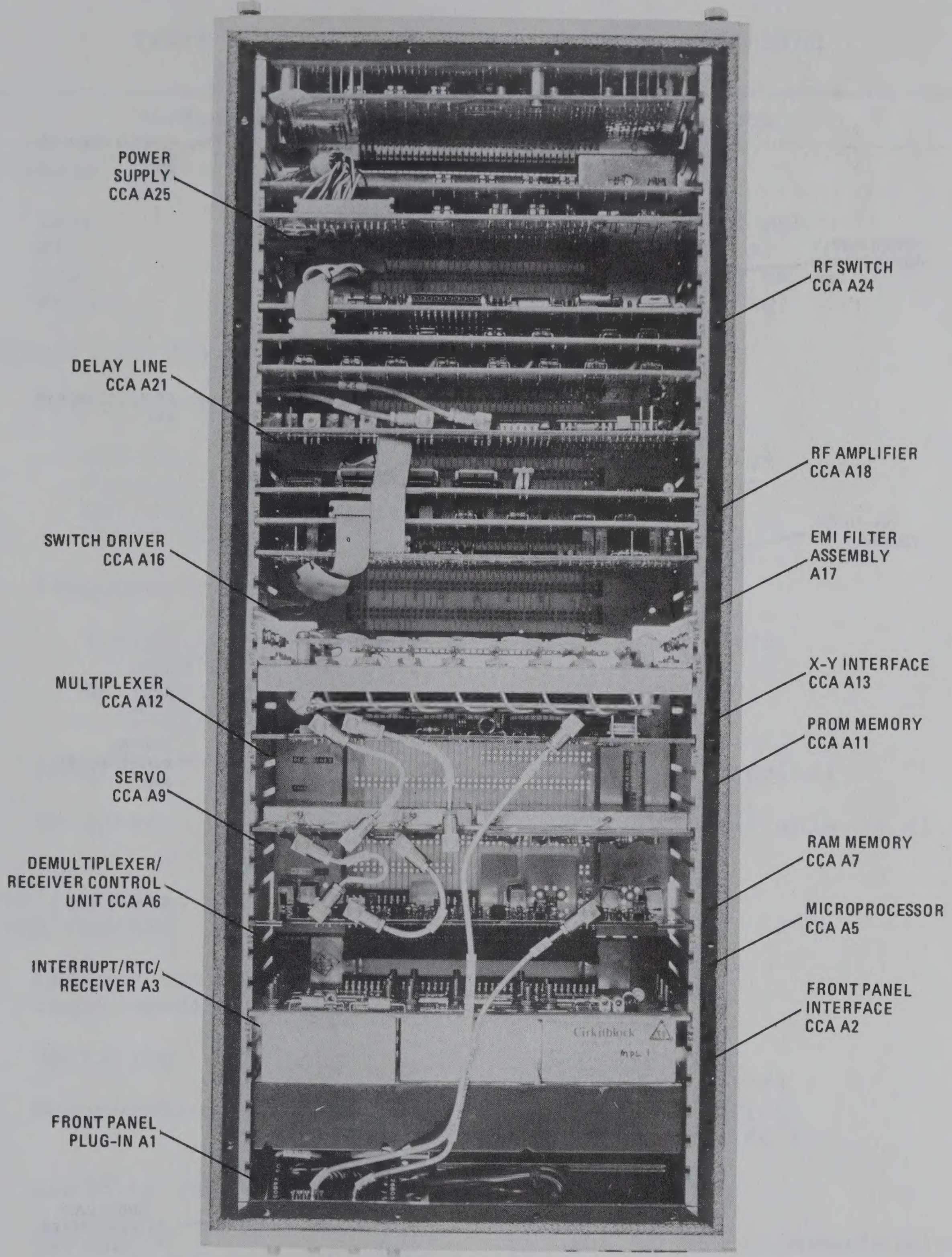

DFS-7D
AUTOMATIC DIRECTION FINDER
FREQ / TIME / BW
POWER ON
OFF
OFFSET
DUAL
BEARING
ENTER
KEYBOARD
TUNE MODE
7
SWEEP
4
AUTO STEP
1
MAN STEP
CLEAR
MAN
DF MODE
8
CONT
5
AUTO CONT
2
AUTO SINGLE
0
MAN
9
REMOTE
6
BITE
3
TIME
.
BW
TUNING
MODE
FM
USB
AM
LSB
CW
CW
AUDIO GAIN
AUDIO
STORE
RECALL
TEST
SHIFT
INCR FREQ
DECR FREQ
DF

FRONT VIEW


J1
J2
J3
J4
J5
C-5320/GRD-503
STK 5865-21-875-0739
SER
DND CANADA MDN
MFR 28815
CONTR 2PZ82-00009
PT/PC 10—124485
J6
J7
J8
J9
J10
CB1

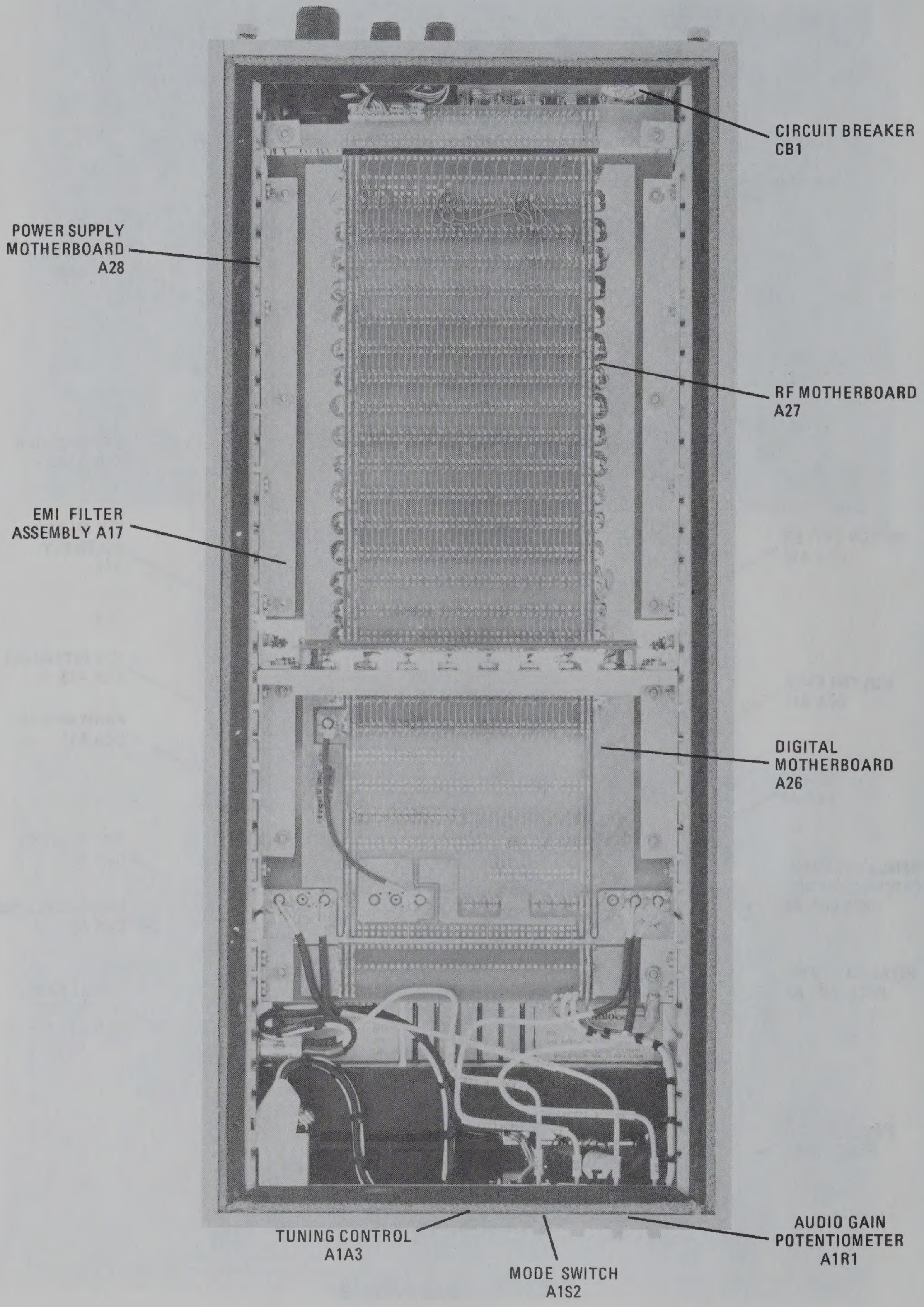
REAR VIEW

Figure 1-1. C-5320, Front and Rear Views


POWER SUPPLY CCA A25
RF SWITCH CCA A24
DELAY LINE CCA A21
RF AMPLIFIER CCA A18
SWITCH DRIVER CCA A16
EMI FILTER ASSEMBLY A17
MULTIPLEXER CCA A12
X-Y INTERFACE CCA A13
PROM MEMORY CCA A11
SERVO CCA A9
DEMULTIPLEXER/ RECEIVER CONTROL UNIT CCA A6
RAM MEMORY CCA A7
MICROPROCESSOR CCA A5
INTERRUPT/RTC/ RECEIVER A3
FRONT PANEL INTERFACE CCA A2
FRONT PANEL PLUG-IN A1

TOP VIEW – COVER REMOVED

Figure 1-2. C-5320, Top View


CIRCUIT BREAKER CB1
POWER SUPPLY MOTHERBOARD A28
RF MOTHERBOARD A27
EMI FILTER ASSEMBLY A17
DIGITAL MOTHERBOARD A26
TUNING CONTROL A1A3
MODE SWITCH A1S2
AUDIO GAIN POTENTIOMETER A1R1

BOTTOM VIEW – COVER REMOVED

Figure 1-3. C-5320, Bottom View

Table 1-1. C-5320 Technical Characteristics

Parameters	Specifications
Physical Characteristics	
Height	8 in (20.8 cm)
Width	5 in (13 cm)
Depth	16 in (41.6 cm)
Weight	15 lb (6.8 kg)
Electrical Characteristics	
Primary Power:	
Voltage	115 V ac ±10%
Frequency	50 to 400 Hz
Current	2.5 A
Power consumption	288 W
Frequency range:	
Tuning frequency range (receiver)	20 to 150 MHz
DF frequency range (C-5320)	20 to 80 MHz
Accuracy	2.5° rms, typical
DF speed	Reading available in <1.5 seconds.
Environmental Conditions/ Requirements	
Ambient temperature requirements:	
Operating	0° to +60°C (32° to 140°F)
Nonoperating	-45.5° to 71°C (-50° to +160°F)
Humidity requirements:	
Operating	10% to 95% (noncondensing)
Nonoperating	10% to 95% (noncondensing)

Table 1-2. Equipment Supplied

Official Nomenclature	Common Name	Manufacturers' Model/Part Number
C-5320/GRD-503 Control-Indicator	C-5320	10-124485-1
Front Panel Plug-In A1	Front Panel A1	10-136620-1
Front Panel CCA A1A1	Front Panel CCA A1A1	10-124484-1
Front Panel Control CCA A1A2	Front Panel Control CCA A1A2	10-124464-1
Front Panel Motherboard A1A4	Front Panel Motherboard A1A4	10-127384-1
Front Panel Interface circuit card assembly (CCA) A2	Front Panel Interface CCA A2	10-124494-1
Interrupt/RTC/Receiver CCA A3	Interrupt/RTC Receiver CCA A3	10-131954-1
Microprocessor CCA A5	CPU CCA A5	10-129734-1
Demultiplexer/Receiver Control Unit CCA A6	DEMUX/RCU Interface CCA A6	10-133260-1
RAM Memory CCA A7	RAM CCA A7	10-129758-1
Servo CCA A9	Servo CCA A9	10-131964-1
PROM Memory CCA A11	PROM CCA A11	10-129748-1
Multiplexer Interface CCA A12	MUX Interface CCA A12	10-133256-1

Table 1-2. Equipment Supplied (Continued)

Official Nomenclature	Common Name	Manufacturers' Model/Part Number
X-Y Interface CCA A13	X-Y Interface CCA A13	10-129204-1
Switch Driver CCA A16	Switch Driver CCA A16	10-131974-1
EMI Filter Assembly	EMI Assembly A17	10-138766-1
RF Hybrid Amplifier CCA A18	Hybrid Amplifier CCA A1	10-129189-1
Delay Line CCA A21	Delay Line CCA A21	10-129180-1
RF Switch CCA A24	RF Switch CCA A24	10-125424-2
Power Supply CCA A25	Power Supply CCA A25	10-124444-1
Digital Motherboard A26	Digital Motherboard A26	10-127404-1
RF Motherboard A27	RF Motherboard A27	10-129184-1
Power Supply Motherboard A28	Power Supply Motherboard A28	10-127444-1

Table 1-3. Equipment Required But Not Supplied

Common Name	Required Capabilities	Recommended Model (or Equivalent)
VHF Receiver	Remote digital tuning	ESL Model R-5076/U
RF Signal Generator	20-80 MHz output	Hewlett-Packard HP8640B
Four-Way Power Divider	20-80 MHz range; 50 ohms impedance	Merrimac PD-40-100
Oscilloscope	>10 MHz bandwidth, dc coupled	Hewlett-Packard HP1715A
Oscilloscope	X and Y axis: >100 kHz; Z axis: dc coupled blanking with <15 volts applied	Hewlett-Packard HP182T
Digital Multimeter	Ac, dc, and resistance ranges	Hewlett-Packard HP3466A
CCA Removal Tool	Circuit card extraction	Protolab #3140

CHAPTER 2

INSTALLATION

2-1. INSPECTION. Inspect the shipping carton for possible damage before unpacking the unit. After the equipment is uncrated, inspect the C-5320 for completeness and/or damage incurred during shipment. Visually inspect all exterior surfaces for broken elements and damaged connectors. Check all interior coaxial cables for loose connections. Report damaged and/or incomplete shipments to the appropriate authorities.

2-2. INPUT/OUTPUT CONNECTORS. External connectors for the C-5320 are listed in table 2-1 and shown in figure 2-1.

2-3. LOCATION AND MOUNTING. The C-5320 may be installed in the DF Chassis Assembly or on a table as desired. Procedures for installing the C-5320 in the DF Chassis Assembly are provided in ESL-IM367, Instruction Manual For Direction Finder Chassis Assembly.

2-4. CHECKOUT AND PRELIMINARY ADJUSTMENT. After the C-5320 is mounted in the desired location, run the performance test given in chapter 5, table 5-4. If the C-5320 passes the performance test, follow the instructions given in chapter 3 for starting and operating the equipment.

Table 2-1. C-5320 Input/Output Connectors

Connector	Function	Connects to
	Input connectors	
J1	DF Servo	Receiver J2
J5	Serial data and power	Receiver J1
J7-J10	Received RF	North, east, south, and west elements, respectively, of DF antenna
	Output connectors	
J2	DFRF	Receiver J4
J3	Received RF	Collection Receiver
J4	Servo Test	Test equipment
J6	Serial Data In, Serial Data Out, X, Y, and Z axis	Graphic Display Unit and Multiplexer, Demultiplexer, Receiver Control Unit according to master or remote station operation

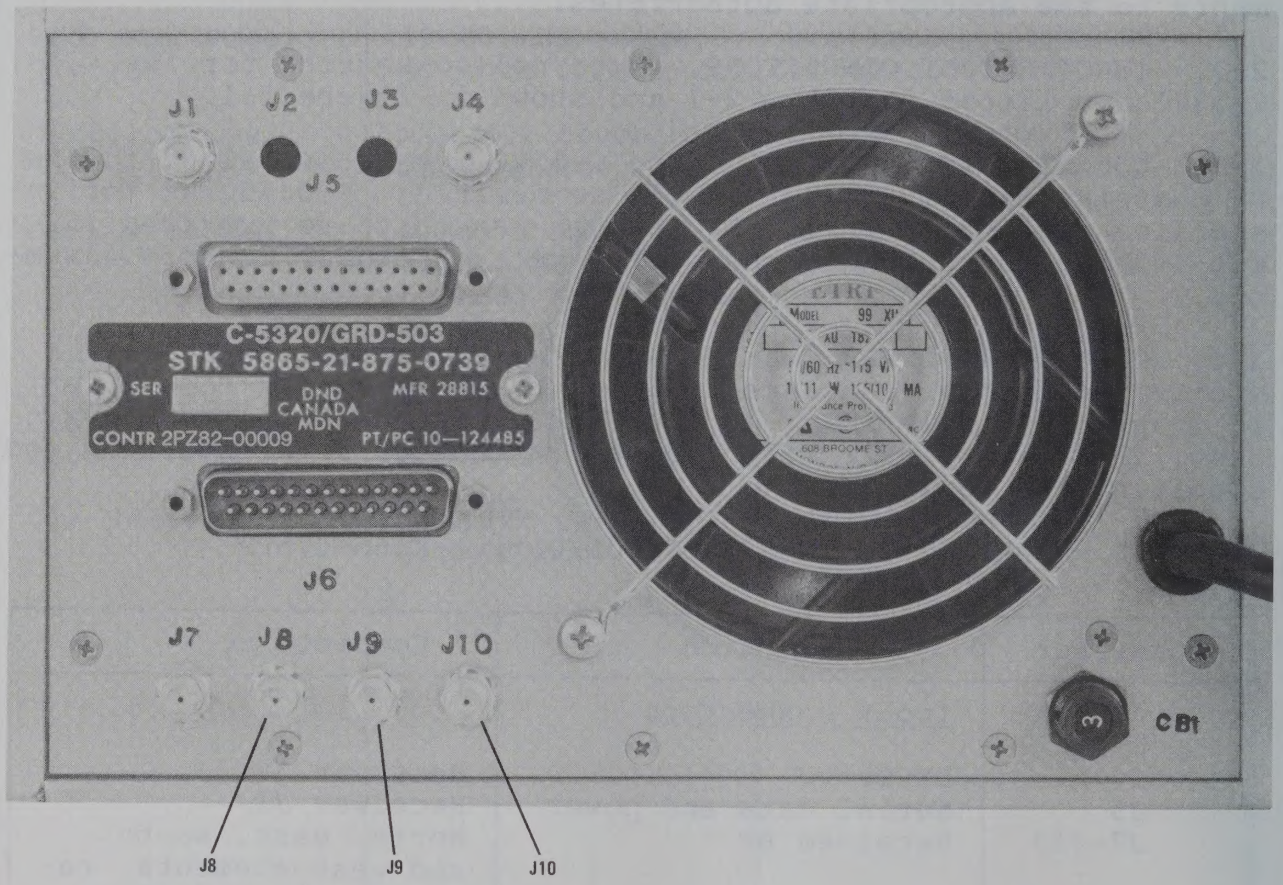

J1
J2
J3
J4
J5
C-5320/GRD-503
STK 5865-21-875-0739
SER
MFR 28815
DND
CANADA
MDN
CONTR 2PZ82-00009
PT/PC 10—124485
J6
J7
J8
J9
J10
CB1
J8
J9
J10

Figure 2-1. C-5320 External Connectors

CHAPTER 3

OPERATING INSTRUCTIONS

3-1. CONTROLS AND INDICATORS. Front panel controls and indicators for the C-5320 are shown in figure 3-1 with index numbers keyed to table 3-1. Table 3-1 provides a description of the operator controls and indicators.

The ENTER and SHIFT keys each perform a single function. Each of the other keyboard keys perform two functions. The primary function of each key is labeled on the key. The secondary function is labeled beside the key and is selected by pressing the SHIFT key before pressing the desired key. The light emitting diode (LED) beside the key provides a visual indication that the secondary function is selected.

3-2. OPERATING INSTRUCTIONS. The C-5320 is capable of operating as either a master station or remote station. Primary functions of the keyboard keys permit entering and clearing numeric data, increasing and decreasing the tuned frequency, and initiating single direction finder (DF) measurements. Secondary functions enable the selection of four tune and four DF modes, initiate the remote operating mode, display the current time and bandwidth, initiate one of two test modes, and store or recall numeric data in any of 40 storage bins.

a. Start. To apply power to the C-5320, set the front panel POWER switch to ON. The fan operates, and the front panel REMOTE and TUNE MODE MAN indicators light.

b. Operate. The C-5320 is in the remote station mode when power is first applied. To select the master station mode, press the SHIFT key then the 9 (REMOTE) key. The REMOTE indicator goes off, and the front panel controls are enabled.

To select the remote station mode during master station operation, press the SHIFT key then the 9 (REMOTE) key. The REMOTE and TUNE MODE MAN indicators light, and the front panel controls are disabled.

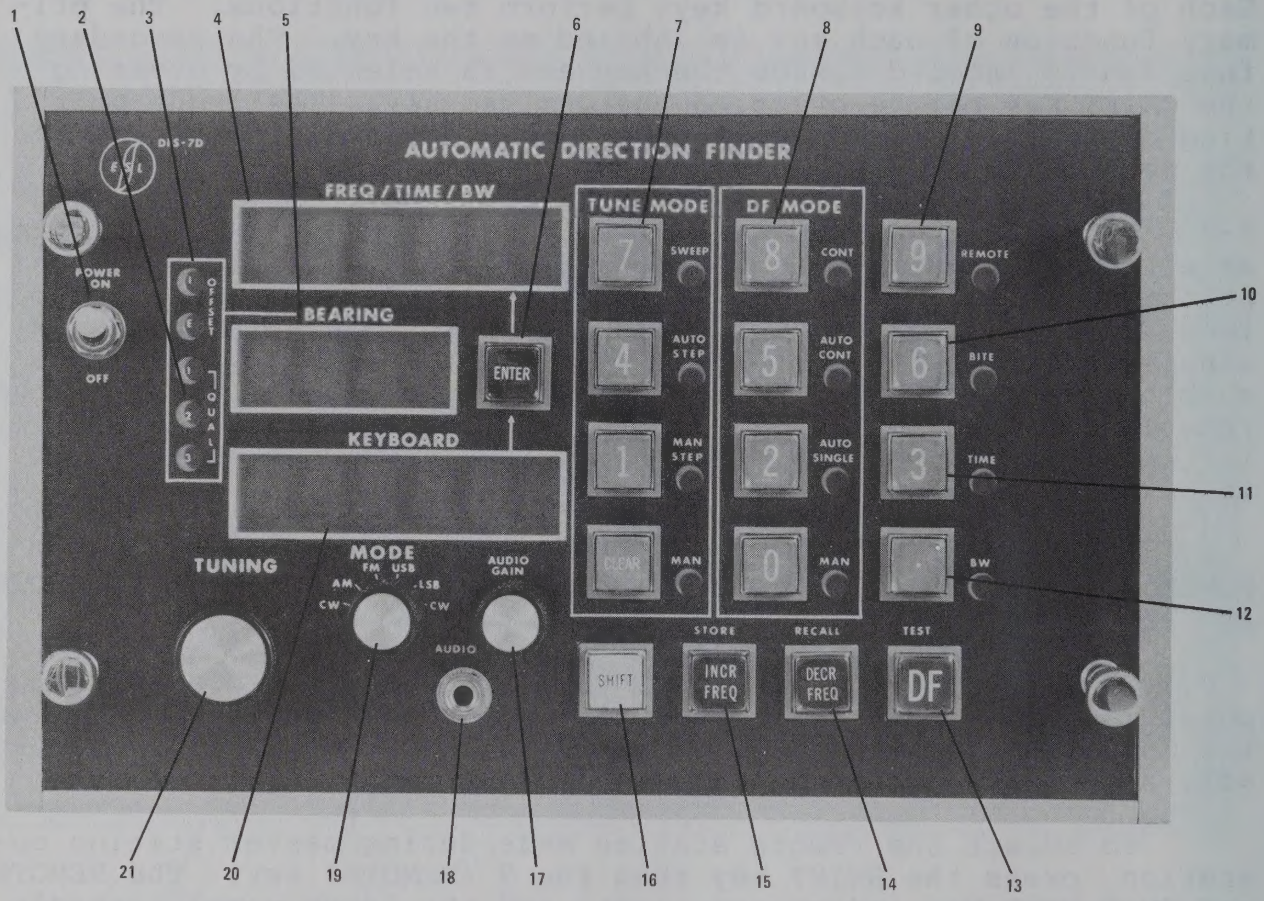

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
DIS-7D
AUTOMATIC DIRECTION FINDER
FREQ / TIME / BW
POWER ON
OFF
OFFSET
DUAL
BEARING
ENTER
KEYBOARD
TUNE MODE
7
SWEEP
4
AUTO STEP
1
MAN STEP
CLEAR
MAN
DF MODE
8
CONT
5
AUTO CONT
2
AUTO SINGLE
0
MAN
9
REMOTE
6
BITE
3
TIME
.
BW
TUNING
MODE
FM
USB
AM
LSB
CW
CW
AUDIO GAIN
AUDIO
SHIFT
STORE
INCR FREQ
RECALL
DECR FREQ
TEST
DF

Figure 3-1. C-5320 Controls and Indicators

Table 3-1. C-5320 Controls and Indicators

Figure & Index No.	Control/Indicator	Function
3-1		
-1	POWER Switch (A1S1)	
	ON	Applies ac power to C-5320.
	OFF	Removes ac power from C-5320.
-2	QUAL Indicators	
	1 (DS4)	Lights when received signal quality is good.
	2 (DS5)	Lights when received signal quality is fair.
	3 (DS6)	Lights when received signal quality is poor.
-3	OFFSET Indicators	
	I (DS2)	Lights when line-of-bearing (LOB) display offset is being generated internally.
	E (DS3)	Lights when LOB display offset is being generated externally.
-4	FREQ/TIME/BW Readout (DS19 thru DS21)	Displays receiver frequency, current time, and selected bandwidth.
-5	BEARING Readout (DS22, DS23)	Displays LOB data for signal in degrees and tenths of degrees.
-6	ENTER Key (S4)	When pressed, moves data from KEYBOARD readout to FREQ/TIME/BW readout and makes data available to CPU.

Table 3-1. C-5320 Controls and Indicators (Continued)

Figure & Index No.	Control/Indicator	Function
3-1 -7	TUNE MODE	
	7 Key (S1) (SWEEP)	Pressed to enter 7 in KEYBOARD readout. When SHIFT then 7 (SWEEP) keys pressed, SWEEP indicator DS7 lights, and C-5320 sweeps between upper and lower frequency limits from two consecutive storage bins.
	4 Key (S5) (AUTO STEP)	Pressed to enter 4 in KEYBOARD readout. When SHIFT then 4 (AUTO STEP) keys pressed, AUTO STEP indicator DS8 lights, and C-5320 steps through all frequencies in storage bins.
	1 Key (S8) (MAN STEP)	Pressed to enter 1 in KEYBOARD readout. When SHIFT then 1 (MAN STEP) keys pressed, MAN STEP indicator DS9 lights, and C-5320 tunes to frequency stored in next higher or lower storage bin when INCR FREQ (STORE) or DECR FREQ (RECALL) key, respectively, pressed.
	CLEAR Key (S11) (MAN)	Pressed to clear KEYBOARD readout.

Table 3-1. C-5320 Controls and Indicators (Continued)

Figure & Index No.	Control/Indicator	Function
3-1 -7 (Cont)		When SHIFT then CLEAR (MAN) keys pressed, MAN indicator lights, and C-5320 can be tuned to a new frequency with keyboard, TUNING control, INCR FREQ (STORE)and DECR FREQ (RECALL) keys.
-8	DF MODE 8 Key (S2) (CONT)	Pressed to enter 8 in KEYBOARD readout.
		When SHIFT then 8 (CONT) keys pressed, CONT indicator DS11 lights and continuous DF measurements taken, whether or not signal is present.
	5 Key (S6) (AUTO CONT)	Pressed to enter 5 in KEYBOARD readout.
		When SHIFT then 5 (AUTO CONT) keys pressed, AUTO CONT indicator DS12 lights, and DF measurements are taken only when signal is present.
	2 Key (S9) (AUTO SINGLE)	Pressed to enter 2 in KEYBOARD readout.
		When SHIFT then 2 (AUTO SINGLE) keys pressed, AUTO SINGLE indicator DS13 lights, and C-5320 takes one DF measurement as soon as signal is present.

Table 3-1. C-5320 Controls and Indicators (Continued)

Figure & Index No.	Control/Indicator	Function
3-1 -8 (Cont)	0 Key (S12) (MAN)	Pressed to enter 0 in KEYBOARD readout. When SHIFT then 0 (MAN) keys pressed, MAN indicator DS14 lights, and DF measurement is taken when DF (TEST) key is pressed.
-9	9 Key (S3) (REMOTE)	Pressed to enter 9 in KEYBOARD readout. When SHIFT then 9 (REMOTE) keys pressed during master station operation, REMOTE indicator DS15 lights, and C-5320 begins remote station operation. When SHIFT then 9 (REMOTE) keys pressed during remote station operation, REMOTE indicator DS15 goes out, and C-5320 begins master station operation.
-10	6 Key (S7) (BITE)	Pressed to enter 6 in KEYBOARD readout. When SHIFT then 6 (BITE) keys pressed, built-in test equipment (BITE) mode is enabled/disabled and BITE indicator DS16 lights/goes off, respectively.

Table 3-1. C-5320 Controls and Indicators (Continued)

Figure & Index No.	Control/Indicator	Function
3-1 -11	3 Key (S10) (TIME)	Pressed to enter 3 in KEYBOARD readout. When SHIFT then 3 (TIME) keys pressed, current time is enabled/disabled for display or setting and TIME indicator DS17 lights/goes off, respectively.
-12	± Key (S13) (BW)	Pressed to enter decimal point in KEYBOARD readout. When SHIFT then ± (BW) keys pressed, BW indicator DS18 lights and IF bandwidth (8, 30, or 50-kHz) displayed or changed.
-13	DF Key (S17) (TEST)	Pressed for a single DF measurement. When SHIFT then DF (TEST) keys pressed, enables manual TEST mode.
-14	DECR FREQ (RECALL) Key (S16)	Pressed once and released to decrease tuned frequency 1 kHz. Pressed and held to decrease tuned frequency in 1-kHz increments at rate set with TUNING control. When SHIFT then DECR FREQ keys pressed, allows recall of frequencies from C-5320 storage bins.

Table 3-1. C-5320 Controls and Indicators (Continued)

Figure & Index No.	Control/Indicator	Function
3-1 -15	INCR FREQ (STORE) Key (S15)	Pressed once and released to increase tuned frequency 1 kHz. Pressed and held to increase tuned frequency in 1-kHz increments at rate set with TUNING control. When SHIFT then INCR FREQ keys pressed, allows storage of frequencies in C-5320 storage bins.
-16	SHIFT Key (S14)	Pressed to enable secondary function of next keyboard key pressed.
-17	AUDIO GAIN Potentiometer (A1R1)	Clockwise rotation increases volume of received signal at AUDIO output. Counterclockwise rotation decreases volume of received signal at AUDIO output.
-18	AUDIO Jack (A1A8)	Allows operator to monitor received audio signal.
-19	MODE Switch (A1S2)	
	CW	Selects continuous wave reception mode.
	AM	Selects amplitude modulation reception mode.

CHAPTER 4

PRINCIPLES OF OPERATION

4-1. INTRODUCTION. This chapter contains a functional description of the circuitry contained in the C-5320. The description is divided into three parts consisting of a functional block diagram description, a detailed circuit description, and power distribution.

4-2. GENERAL INFORMATION. This paragraph provides information that applies to all of the following circuit descriptions.

a. Logic Levels. The C-5320 uses positive transistor-transistor-logic (TTL). Positive TTL is described in the following paragraphs.

(1) Logic High. A logic high (+2.4 to 5.5 V dc) is equal to a logic one. A logic one indicates that the function described by the signal name is true.

(2) Logic Low. A logic low (0.0 to +0.4 V dc) is equal to a logic zero. A logic zero indicates that the function described by the signal name is false.

b. Signal Names. Signal names describe the function performed by the signal. A signal name expressed with a bar over it is read with the prefix NOT. For example, $\overline{\text{CLEAR}}$ is read NOT CLEAR. If $\overline{\text{CLEAR}}$ is low (zero or false), the opposite (CLEAR) is assumed to be high (one or true).

4-3. BLOCK DIAGRAM DESCRIPTION. Figure 4-1 shows a functional block diagram of the C-5320. The C-5320 receives four RF signals from the DF antenna array through connectors J7 thru J10. Two of the RF signals are selected as the DF baseline, converted to a constant amplitude modulated signal (DFRF) and routed to the receiver through connector J2. The receiver demodulates the DFRF signal and sends the DF SERVO signal to the C-5320 through connector J1. The DF SERVO signal is used by the C-5320 to determine the line of bearing (LOB) to the transmitter that is emitting the RF signal.

The C-5320 can operate in a master or remote station mode. In the master station mode, any number of remote stations may be controlled by the C-5320. DF mode and receiver control data are routed from the master station C-5320 through connector J6 to a Multiplexer (MUX) for transmission to the remote stations over a voice-quality communications link. In the remote station mode, the C-5320 receives DF mode and receiver control data through connector J6 from either a Receiver Control Unit (RCU) or Demultiplexer (DEMUX). Receiver control data is routed to the receiver through connector J2. An RF signal (INTERCEPT) is routed from the east, south, or west element of the DF antenna array to the receiver. Audio from the INTERCEPT signal is routed to the AUDIO jack for signal monitoring. Whether operating as a master or remote station, the C-5320 may be configured to provide X-, Y-, and Z-axis outputs through connector J6 to a graphics display oscilloscope or an RF output through connector J3 to a Collection Receiver. In addition, the SERVO TEST output through connector J4 can be connected to test equipment.

The C-5320 contains 16 circuit card assemblies (CCAs), a tuning encoder, and an electromagnetic interference (EMI) filter assembly that are interconnected by four printed wire motherboards. The CCAs are divided into four sections according to the associated motherboard. The CCAs and associated assemblies and motherboards are listed in table 4-1. The following paragraphs describe each CCA and motherboard in the C-5320. The paragraphs are arranged according to signal flow rather than reference designator.

tri-state data bus. Address signals A0 thru A15 are sent to the other digital section CCAs via a tri-state address bus.

(2) PROM Memory CCA A11. PROM memory CCA A11 contains the program instructions that are executed by the CPU. PROM memory CCA A11 receives address signals A0 thru A15 from the CPU via the address bus. Data signals D0 thru D7 are routed from PROM memory to the CPU via the data bus.

(3) RAM Memory CCA A7. RAM memory CCA A7 provides intermediate data storage for the CPU. Address signals A0 thru A15 are received from the CPU via the address bus. Data signals D0 thru D7 are routed from RAM memory CCA A7 to the CPU via the data bus.

(4) Interrupt/RTC/Receiver CCA A3. Interrupt/RTC/Receiver interface CCA A3 receives interrupt signals MINT0, MINT8, MINT10, MINT18, MINT20, MINT28, MINT30, and MINT38 from the other CCAs in the digital section and buffers the signals onto the CPU interrupt lines. Receiver control data and the 2-MHz clock signal are received from the CPU. Receiver control data is sent to the receiver as a 51-bit serial data stream. The receiver control data bit assignments are shown in table 4-3. The 2-MHz clock is converted to a 1-kHz signal that is used as the time base for the real time clock.

Table 4-3. Receiver Control Data Bit Assignments

Bit No.	Function	Level
1	Spare	
2	Spare	
3	Tuning 8 x 100 MHz	
4	Tuning 4 x 100 MHz	
5	Tuning 2 x 100 MHz	
6	Tuning 1 x 100 MHz	
7	Squelch	1 = on, 0 = off
8	Tuning 8 x 10 MHz	
9	Tuning 4 x 10 MHz	
10	Tuning 2 x 10 MHz	
11	Tuning 1 x 10 MHz	
12	Tuning 8 x 1 MHz	
13	Tuning 4 x 1 MHz	
14	Tuning 2 x 1 MHz	
15	Tuning 1 x 1 MHz	
16	Tuning 8 x 100 kHz	
17	Tuning 4 x 100 kHz	
18	Tuning 2 x 100 kHz	
19	Tuning 1 x 100 kHz	
20	Tuning 8 x 10 kHz	
21	Tuning 4 x 10 kHz	
22	Tuning 2 x 10 kHz	
23	Tuning 1 x 10 kHz	
24	Tuning 8 x 1 kHz	
25	Tuning 4 x 1 kHz	
26	Tuning 2 x 1 kHz	
27	Tuning 1 x 1 kHz	
28	MGC/AGC/LMGC	**
29	MGC control	Weight 16
30	MGC control	Weight 8
31	MGC control	Weight 4
32	MGC control	Weight 2
33	MGC control	Weight 1
34	MGC/AGC/LMGC	**
35	Function select (AM,FM,CW LSB,USB)	***
36	IF BW select	*
37	IF BW select	*
38	Function select (AM,FM,CW,LSB,USB)	***
39	Test tones ON/OFF	1 = on, 0 = off
40	Function select (AM,FM,CW,LSB,USB)	***
41	Function select (AM,FM,CW,LSB,USB)	***
42	Spare	
43	Spare	
44	Clarifier	Weight 32
45	Clarifier	Weight 16
46	Clarifier	Weight 8
47	Clarifier	Weight 4
48	Clarifier	Weight 2
49	Clarifier	Weight 1
50	Spare	
51	Tune receiver A/B	1 - A, 0 - B

*Bits 36 and 37 select the receiver IF filters. They are defined as follows:

Bit No. 36	Bit No. 37	IF Bandwidth Selected
0	0	8 kHz
0	1	30 kHz
1	0	50 kHz

**Bits 28 and 34 select AGC/MGC characteristics. They are defined as follows:

Bit No. 28	Bit No. 34	AGC/MGC Characteristic
0	0	AGC
1	0	MGC
0	1	LMGC

***Bits 35, 38, 40, and 41 select type of reception (function). They are defined as follows:

Bit No. 35	Bit No. 38	Bit No. 40	Bit No. 41	Function Selected
0	0	0	0	FM
0	1	0	0	AM
1	0	0	0	CW
1	0	1	0	LSB
1	0	0	1	USB

(5) Switch Driver CCA A16. Switch driver CCA A16 receives baseline selection data, delay control data, modulation control data, and BITE control data from the CPU. RF switch drive signals RFS0 thru RFS7, delay line control data signals DLS0 thru

For information relating to microprocessor U7, refer to the data sheet in appendix A of this manual.

(d) Input/Output Control Buffers. Input/output port U9 buffers the input and output control signals to/from microprocessor U7. The GS output of priority encoder U16 is buffered by U9A. The DBIN signal is buffered by U9B. Input/output port U9 is wired so that signals on the inputs (DI) are felt immediately on the outputs (DO).

NOTE

The READY, $\overline{\text{HOLD}}$, $\overline{\text{SERV}}$ $\overline{\text{INTE}}$, WR, and WT signals are not used.

(e) Interrupt Circuitry. The interrupt circuitry consists of priority encoder U16 and restart instruction buffer U8. Priority encoder U16 inputs I0 thru I7 are arranged according to priority, with I0 having the highest priority and I7 having the lowest priority. When one of the digital section CCAs requires some specific operation to be performed by the CPU, the CCA sends an interrupt signal that interrupts program execution. If two or more CCAs send interrupts at the same time, the highest priority interrupt is sent to microprocessor U7 first. Interrupt signals MINT0, MINT8, MINT10, MINT18, MINT20, MINT28, MINT30, and MINT38 are received by priority encoder U16 from the digital section CCAs. Priority encoder U16 generates a three-bit code that represents the highest priority interrupt received. The code is routed to restart instruction buffer U8. At the same time, the GS output is set low and sent to input/output control buffer U9. Buffer U9 puts a high on the INT input of microprocessor U7. Restart instruction buffer U8 then places an instruction byte on the data bus. This instruction byte tells microprocessor U7 the starting address of the subroutine that processes the interrupt. Interrupt timing is shown in figure 4-7.

NOTE

The $\overline{\text{MINT0}}$, $\overline{\text{MINT30}}$, and $\overline{\text{MINT38}}$ signals are not used.

(f) Address Bus Driver. The address bus driver is comprised of input/output ports U6 and U12. Ports U6 and U12 serve as tri-state buffers for the microprocessor U7 address lines. Ports U6 and U12 are controlled by the DBIN and INTA signals. When either DBIN or INTA are low, ports U6 and U12 are selected for buffer operation and address signals A0 thru A15 from micoprocessor U7 are buffered onto the address bus. When both DBIN and INTA are high, the outputs of ports U6 and U12 are set to the tri-state (high impedance) condition and address signals A0 thru A15 are not sent.

(g) Data Bus Driver. The data bus driver consists of bus drivers U18 and U19. The bus drivers buffer data signals D0

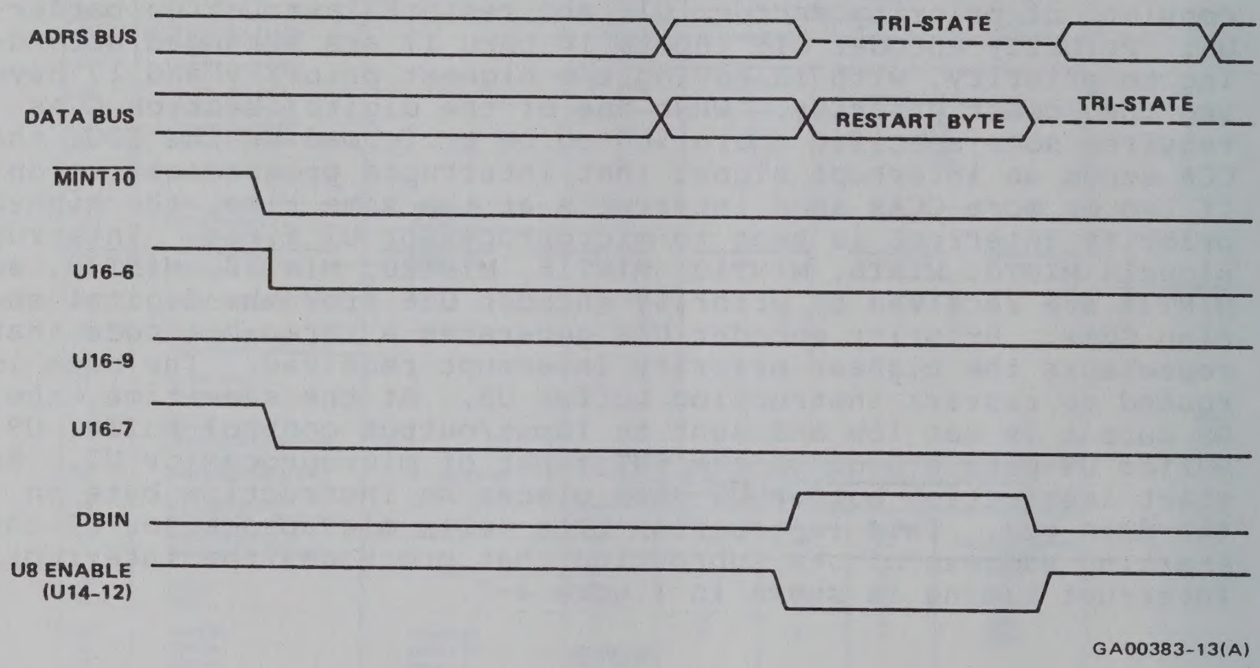

ADRS BUS
TRI-STATE
DATA BUS
RESTART BYTE
TRI-STATE
MINT10
U16-6
U16-9
U16-7
DBIN
U8 ENABLE
(U14-12)
GA00383-13(A)

Figure 4-7. Interrupt Timing Diagram

DIG 2, DIG 4, and DIG 8. The DIG 8 signal is used to clock the pushbutton key interface circuit. The outputs of counter U2 are gated by AND gate U18 and NAND gate U9B to form the digital blanking (DIG B) signal that is used by front panel control CCA A1A2 to blank the enabled readout cell.

(d) Indicator Interface. To change the front panel indications, the CPU places data signals D0 thru D7 on the data bus and sends the proper address (see table 4-2). Decoder U5 decodes address signals A0 and A1 to generate register enable signals DAD10 thru DAD12 that strobe data signals D0 thru D7 into the indicator driver registers on front panel CCA A1A1.

(e) TUNING Encoder and MODE Switch Interface. Each time TUNING encoder A1A3 is turned, the tuning encoder interface circuit generates the MINT20 and DIRECT signals, interrupting the CPU and indicating direction of rotation. The CPU responds to the interrupt by sending the proper address (see table 4-2) that is decoded by the address decoder circuit. The 2Y3 output of decoder U5 is NANDed with the MEMRS signal to generate the KYBDR signal. The KYBDR signal is sent to front panel CCA A1A1 to strobe TUNING encoder and MODE switch data onto the data bus.

(f) Pushbutton Key Interface Circuit. The pushbutton key interface circuit consists of binary counter U10, gating circuit U16A, U16B, U16C, U18A and interrupt flip-flop U4C and U4D. The outputs of counter U10 are gated by U16A, U16B, U16C, and U18A to form pushbutton key select signals KR0 thru KR2. Counter U10 counts DIG 8 pulses as long as the front panel pushbutton keys are released. When a front panel pushbutton key is pressed, the KGS signal is received low by flip-flop U4C and U4D. Flip-flop U4D pin 11 is set low, stopping counter U10 and sending interrupt signal MINT18 to the CPU. The CPU responds to the interrupt by sending the proper address (see table 4-2). The CPU then sets the MEMRS signal low to strobe pushbutton key data signals KA0 thru KA2 onto the data bus.

(g) Power Supply. Power supply PS1 receives +5 V dc from power supply CCA A25. Power supply PS1 generates -30 and +180 V dc. These voltage levels are routed to front panel CCA A1A1 and front panel control CCA A1A2, respectively. The voltages are used to enable the readout cells on front panel CCA A1A1.

(8) DEMUX/RCU Interface CCA A6. Figure 4-16 shows a functional block diagram of DEMUX/RCU interface CCA A6. Figure 7-13 shows a schematic diagram. The CCA contains an address decoder, differential line receivers, a shift register, timing counter, address counter, comparator, address select switch, 16 x 4-bit RAM, and interrupt latches. DEMUX/RCU interface CCA A6 allows the C-5320 to be remotely controlled by a master C-5320. The master station sends C-5320 and receiver control data over a voice-quality communication link. The data is received at the remote location and routed to either a Demultiplexer (DEMUX) or

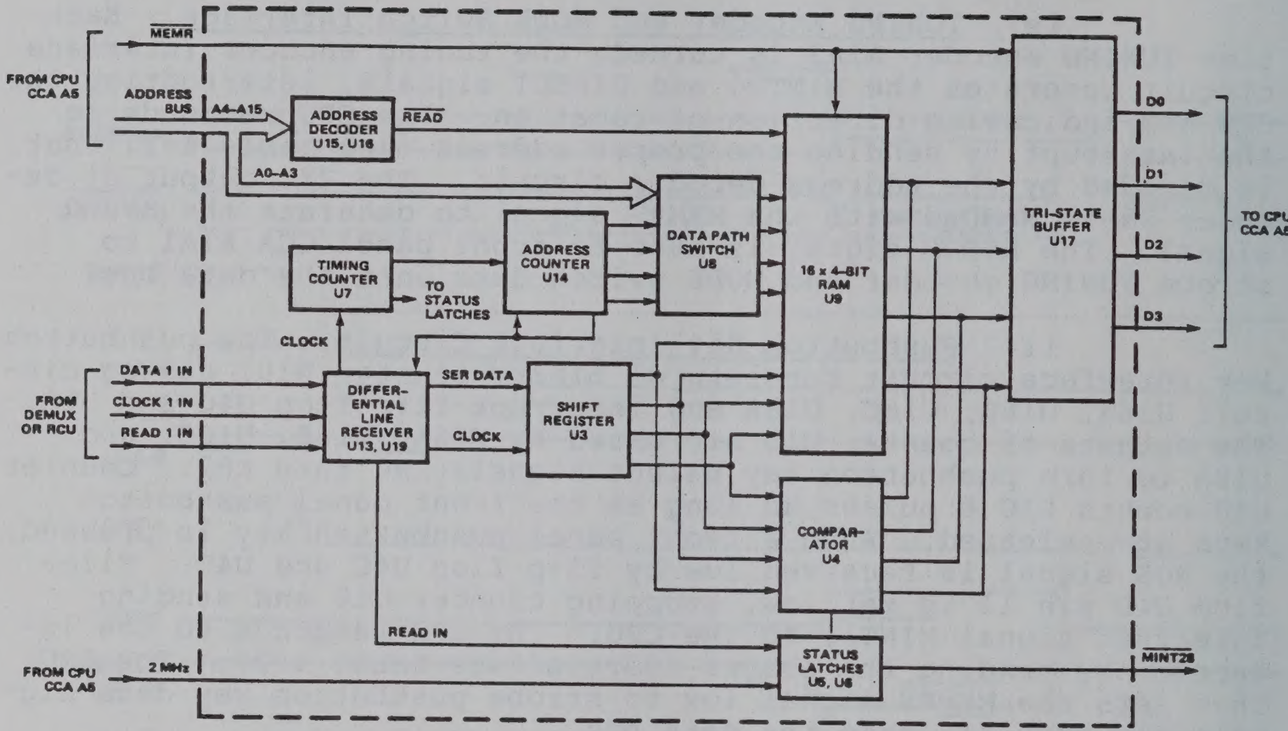

FROM CPU CCA A5
ADDRESS BUS
MEMR
A4-A15
ADDRESS DECODER U15, U16
READ
A0-A3
DATA PATH SWITCH U8
ADDRESS COUNTER U14
TIMING COUNTER U7
TO STATUS LATCHES
CLOCK
16 x 4-BIT RAM U9
TRI-STATE BUFFER U17
D0
D1
D2
D3
TO CPU CCA A5
FROM DEMUX OR RCU
DATA 1 IN
CLOCK 1 IN
READ 1 IN
DIFFER-ENTIAL LINE RECEIVER U13, U19
SER DATA
CLOCK
SHIFT REGISTER U3
COMPAR-ATOR U4
READ IN
FROM CPU CCA A5
2 MHz
STATUS LATCHES U5, U6
MINT28

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Figure 4-16. DEMUX/RCU Interface CCA A6 Functional Block Diagram

Receiver Control Unit (RCU) that sends the data to DEMUX/RCU interface CCA A6 in the remote C-5320. The interface CCA is capable of processing a 64-bit serial data stream. However, in the remote C-5320, the CCA is required to process only 51 bits.

The 51-bit serial data stream sent by the master C-5320 is similar to the receiver control word with the following exceptions:

Bit 1	High enables RF preamplifier in C-5320. Low disables RF preamplifier in C-5320.
Bit 2	High commands one DF measurement to be taken. Low indicates that no DF measurement is to be taken when the C-5320 is in manual DF mode.
Bit 50	High commands continuous DF mode. Low commands manual DF mode.

The DEMUX/RCU interface CCA performs two functions simultaneously: new data is stored as received; the received data is compared with the stored data, and the CPU is interrupted if the data are different. By comparing the received data and the stored data, the DEMUX/RCU interface CCA interrupts the CPU only when necessary.

Figure 4-17 shows a timing diagram for DEMUX/RCU interface CCA A6. When no data is being received, timing counter U7 is full, address counter U14 is empty, interrupt latch U5A is clear, and the READ signal from address decoder U16 is high, indicating that CCA A6 is not being addressed by the CPU. The DEMUX or RCU sends a 51-bit serial data stream (DATA 1 IN), a data clock signal (CLOCK 1 IN), and an end-of-data signal (READ 1IN). The CLOCK 1 IN signal indicates that valid data is available. The DATA 1 IN signal is shifted into shift register U3 by the CLOCK 1 IN signal. The CLOCK 1 IN signal is counted by counter U7, which generates DEMUX/RCU interface timing (see figure 4-17). After four bits have been shifted in, shift register U3 is full, and the Q0 and Q1 outputs of counter U7 are high. At this time, the data in shift register U3 is compared with the data in address 0000 (hexadecimal) of RAM U9. When the fourth CLOCK 1 IN pulse goes low, pin 3 of comparator U4 is strobed into interrupt latch U5A, the data in shift register U3 is loaded into address 0000 (hexadecimal), and address counter U14 is advanced one count. Interrupt latch U5A is set if the data in shift register U3 is different from the data in address 0000 (hexadecimal). Each four-bit nibble is compared and stored in this manner until all 51 bits have been received, and the READ 1 IN signal is received high.

When the READ 1 IN signal is received high, the 2-MHz clock signal toggles flip-flop U6B to form a 1-MHz internal clock

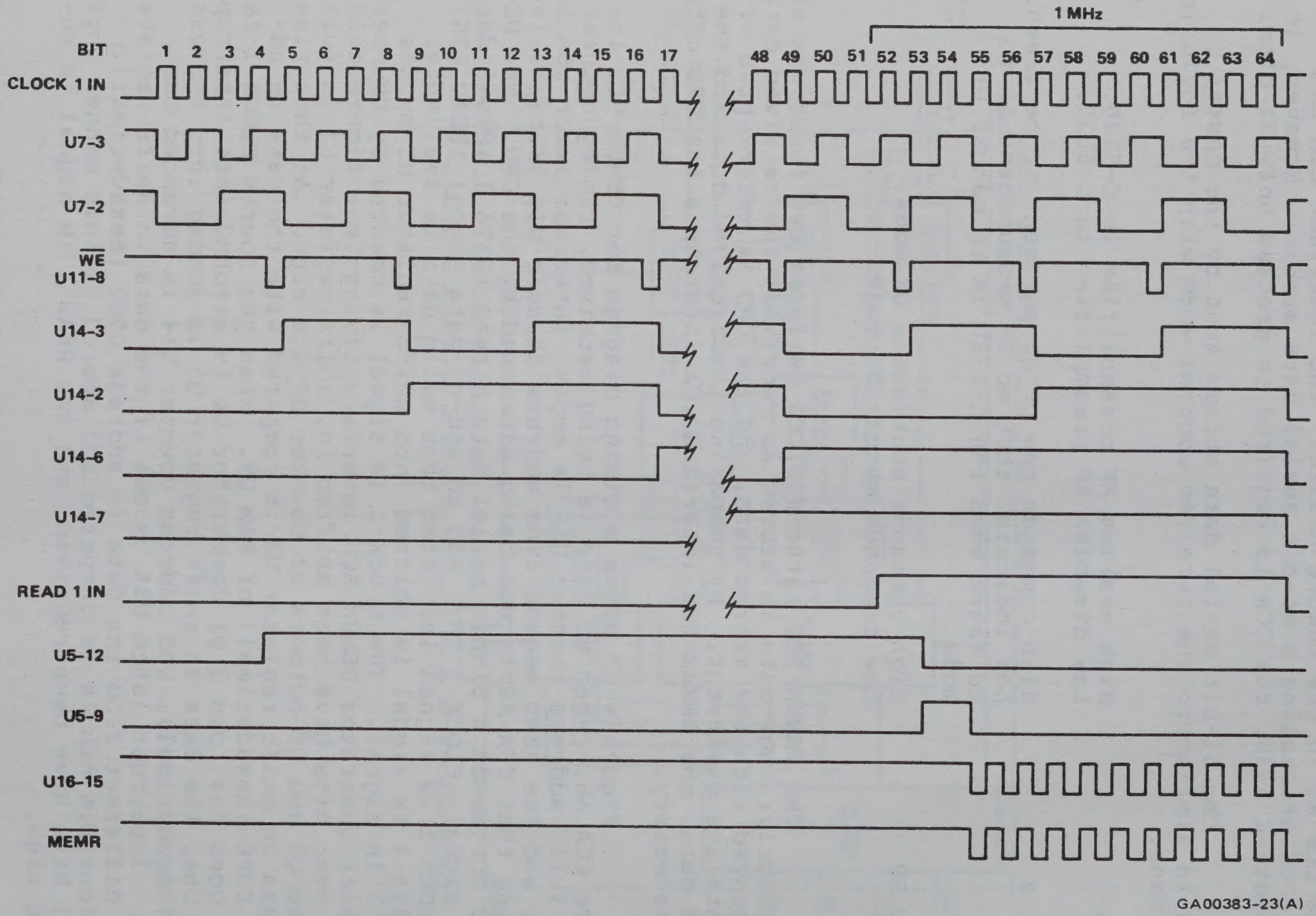

1 MHz
BIT
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17
48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64
CLOCK 1 IN
U7-3
U7-2
WE
U11-8
U14-3
U14-2
U14-6
U14-7
READ 1 IN
U5-12
U5-9
U16-15
MEMR
GA00383-23(A)

Figure 4-17. DEMUX/RCU Interface CCA A6 Timing Diagram

D0 thru D3 are set to the desired value and placed on the data bus. Address signals A0 thru A15 are set to the proper address (see table 4-2) and the MEMW signal is set low. The address decoder (NAND gate U9 and decoder U10) receives and decodes address signals A4 thru A15 to determine if the CPU has addressed MUX interface CCA A12. If MUX interface CCA A12 has been addressed, the WRITE output of U10 is set low and NANDed with the MEMW signal by NAND gate U11B. The output of NAND gate U11B places RAM U6 in the write mode and causes address select switch U5 to pass address signals A0 thru A3 as the address in U6 where data signals D0 thru D7 are to be stored. The CPU runs this sequence until all 13 of the four-bit nibbles have been stored. After all of four-bit nibbles have been stored, the lack of a proper address places U6 in the read mode and causes address select switch U5 to select the output of address counter U2 as the address for U6. In this condition, the MUX starts a data transfer sequence to read the contents of U6.

NOTE

> The HJTB signal is held at +5 V dc by RAM memory CCA A7 and PROM memory CCA A11.

(b) Data Transfer Sequence. Figure 4-19 shows a timing diagram for the data transfer sequence. The data transfer sequence is started when the MUX sets the READ 2 IN signal low. The READ 2 IN signal clears timing counter U3, address counter U2, and loads shift register U7 with the contents of U6 address 0000 (hexadecimal). The MUX then sends a stream of 54 pulses (CLOCK 2 IN) that provides the shift clock for shift register U7 and the count-up pulses for timing counter U3. Each time the CLOCK 2 IN signal goes from low to high while the READ 2 IN signal is low, a data bit is shifted out of U7 to the MUX via line driver U8. The first three CLOCK 2 IN pulses shift bits 1, 2, and 3 out of U7 and advance timing counter U3 to a count of 3 (hexadecimal). When the fourth CLOCK 2 IN pulse is received, bit 4 is shifted out of U7, timing counter U3 is advanced to 4 (hexadecimal), address counter U2 is advanced to 1 (hexadecimal), and U7 is loaded with the contents of U6 address 1 (hexadecimal). The next three CLOCK 2 IN pulses shift bits 5, 6, and 7 out of U7 and advance timing counter U3 to 7 (hexadecimal). The eighth CLOCK 2 IN pulse shifts bit 8 out of U7, advances timing counter U3 to 8 (hexadecimal), advances address counter U2 to 2 (hexadecimal), and loads U7 with the contents of U6 address 2 (hexadecimal). This process continues until all 51 bits have been shifted out to the MUX. After the MUX has received all 51 bits, the READ 2 IN signal is set high indicating that all of the data has been transferred.

(10) X-Y Interface CCA A13. Figure 4-20 shows a functional block diagram of X-Y interface CCA A13. Figure 7-15 shows a schematic diagram. The X-Y interface CCA contains an address decoder, LOB storage register, X-axis circuit, Y-axis circuit,

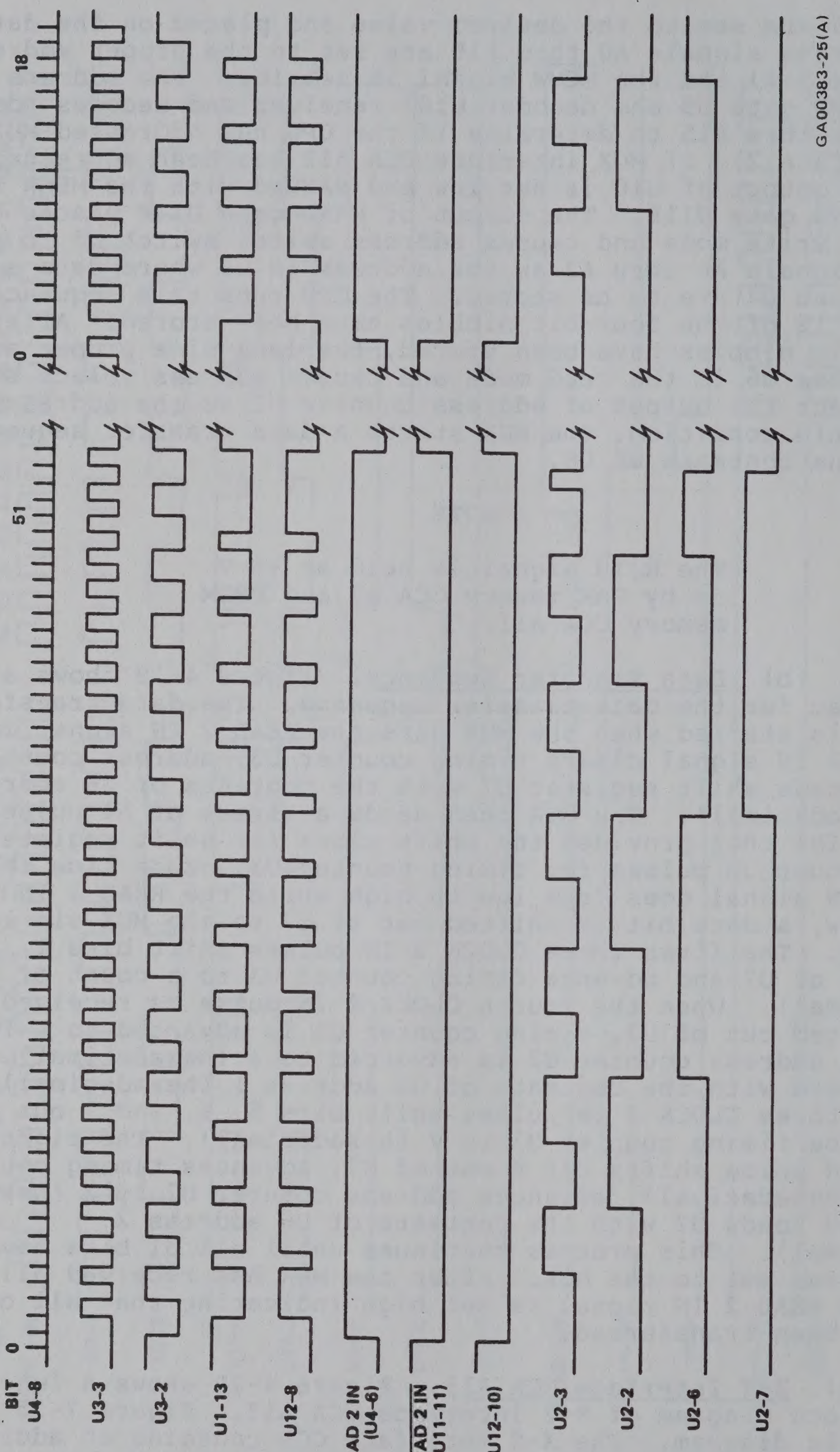

BIT
U4-8
0
51
0
18
U3-3
U3-2
U1-13
U12-8
READ 2 IN
(U4-6)
$\overline{\text{READ 2 IN}}$
(U11-11)
(U12-10)
U2-3
U2-2
U2-6
U2-7
GA00383-25(A)

Figure 4-19. Data Transfer Sequence Timing Diagram

Table 5-4. C-5320 Performance Test

Step	Test Point	Test Equipment	Procedure	Normal Indication	If Indication is Normal	If Indication is Abnormal
			Test Setup			
1	None	RF Signal Generator HP 8640B	a. Connect RF signal generator to C-5320 using the power divider as shown in figure 5-1.			
		Oscilloscope (Graphic display) HP182T	b. Connect graphic display oscilloscope to the C-5320 as shown in figure 5-1.		Proceed with step 2.	
		Power Divider PD-40-100				
			BITE Test			
2	None	Same as step 1.	a. Set POWER switch to ON.	MAN and REMOTE indicators light.		Refer to figure 5-5 for troubleshooting procedures.
			b. Press SHIFT key then 9 (REMOTE) key.	REMOTE indicator goes out.		Refer to figure 5-5 for troubleshooting procedures.
			c. Press SHIFT key then 6 (BITE) key.	The BITE indicator lights. After approximately 2 seconds, 128 ±5 is displayed in the BEARING and KEYBOARD readouts.	Proceed with step 3.	Refer to table 5-7 for BITE test error codes and figure 5-5 for troubleshooting procedures.

Table 5-4. C-5320 Performance Test - Continued

Step	Test Point	Test Equipment	Procedure	Normal Indication	If Indication is Normal	If Indication is Abnormal
			Cable Inspection Test NOTE Perform the following steps when the troubleshooting procedures in figure 5-5 indicate faulty cable(s).			
3	None	Digital Multimeter HP3466A	a. Check the connectors on all cables for damaged or broken pins.	Connector pins uniform height and evenly spaced in the connector shell.		Replace damaged connectors.
			b. Check center conductors of all coaxial cables for continuity between connectors using the digital multimeter.	Digital multimeter indicates a short circuit for all cables.		Replace faulty cables.
			c. Check shields of all coaxial cables for continuity between connectors using the digital multimeter.	Digital multimeter indicates a short circuit for all cables.	Test is complete.	Repair loose or open shields.

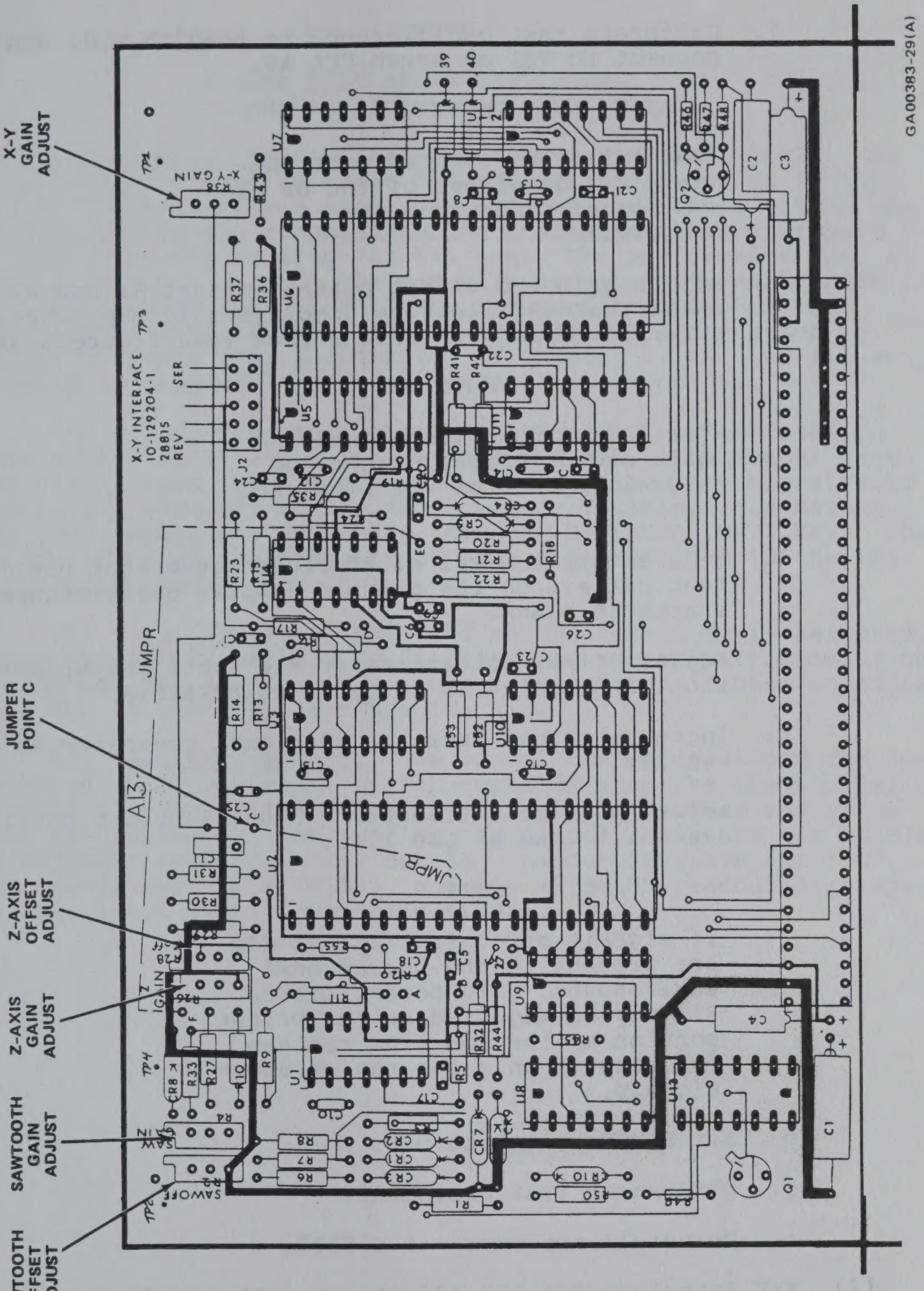

X-Y GAIN ADJUST
JUMPER POINT C
Z-AXIS OFFSET ADJUST
Z-AXIS GAIN ADJUST
SAWTOOTH GAIN ADJUST
SAWTOOTH OFFSET ADJUST
X-Y INTERFACE
10-129204-1
28815
REV
JMPR
A13
GA00383-29(A)

Figure 5-2. Servo CCA A9 Adjustment Locations

j. Calibrate test oscilloscope to read ±5 V dc and connect to TP1 on servo CCA A9.

NOTE

The following step adjusts the gain and dc offset of the DF SERVO signal input from the receiver.

k. Adjust gain and offset potentiometers R1 and R2 until test oscilloscope displays a 10 V p-p triangular waveform with zero offset (see figure 5-3A).

NOTE

The following steps adjust the gain and dc offset of the AGC signal input from the receiver.

l. Reduce output level of RF signal generator until test pattern on the graphic display oscilloscope starts to blank.

m. Adjust offset potentiometer R14 until bright portion of LOB line is as short as possible.

n. Increase output level of RF signal generator to -40 dBm.

o. Adjust gain potentiometer R13 until bright portion extends to end of LOB line.

NOTE

If signals stronger than -40 dBm are present in the operational environment, gain potentiometer R13 may be adjusted so the bright portion of the LOB line reaches full length only for the stronger signals.

p. Set POWER switch to OFF.

q. Disconnect test equipment.

r. Reinstall top cover of C-5320.

(2) X-Y Interface CCA A13 Adjustment. Three adjustments are performed on X-Y interface CCA A13: sawtooth generator adjustment, LOB display size adjustment, and brightness adjustment. The adjustments should be performed in the sequence listed when

NOTE

Figure 5-3C shows the typical output waveforms for a 45° LOB.

b. Troubleshooting. Before troubleshooting the C-5320, run the performance test in table 5-4. If a failure occurs in any step of the performance test, perform the corrective action specified or follow the troubleshooting procedure shown in figure 5-5 to locate the CCA causing the failure. The performance test is used in conjunction with the manual test mode to troubleshoot individual CCAs in the C-5320. Use standard troubleshooting practices in conjunction with the principles of operation in chapter 4, parts list information in chapter 6, and the illustrations in chapter 7 to locate defective components.

The manual test mode generates the test pattern used to align servo CCA A9 and X-Y interface CCA A13. The manual test mode also alters front panel operation to allow the operator to send switch commands to the RF section. To select the manual test mode, press the SHIFT key then the DF (AUTO CONT) key. The two functions of the manual test mode are described in the following paragraphs.

(1) Test Pattern. When the manual test mode is selected, a cross-hair test pattern is displayed on the graphic display oscilloscope (see figure 3-2). This test pattern is used to adjust servo CCA A9 and X-Y interface CCA A13.

(2) Switch Commands. The manual test mode allows the operator to enter eight-bit switch commands from the front panel of the C-5320. The switch commands are entered as ones and zeros using the keyboard. The entries are displayed in the the BEARING and KEYBOARD readouts. The BEARING readout displays the four most significant bits (MSBs), and the KEYBOARD readout displays the four least significant bits (LSBs).

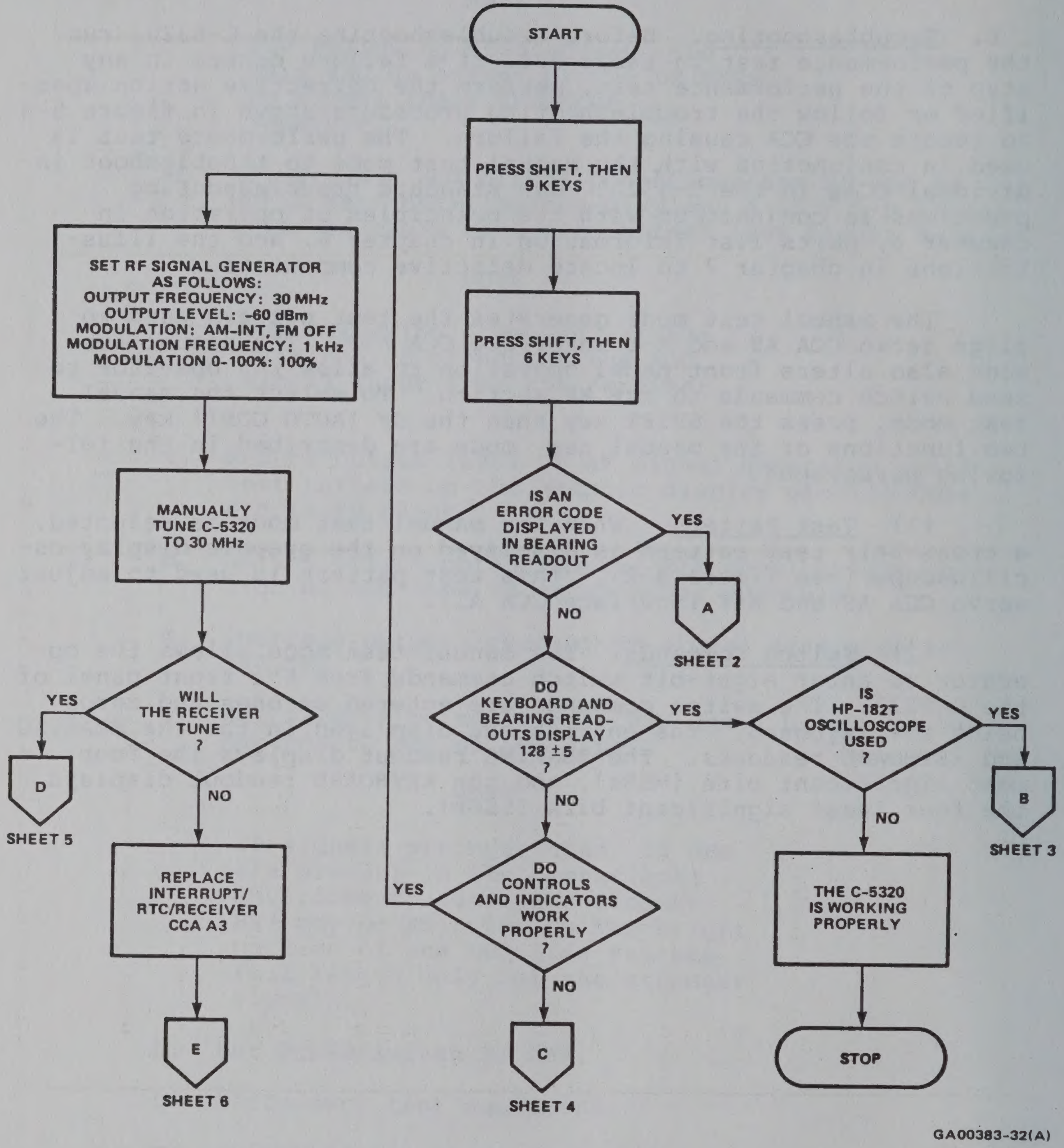

START
PRESS SHIFT, THEN 9 KEYS
PRESS SHIFT, THEN 6 KEYS
IS AN ERROR CODE DISPLAYED IN BEARING READOUT ?
YES
A
SHEET 2
NO
DO KEYBOARD AND BEARING READ-OUTS DISPLAY 128 ±5 ?
YES
IS HP-182T OSCILLOSCOPE USED ?
YES
B
SHEET 3
NO
THE C-5320 IS WORKING PROPERLY
STOP
NO
DO CONTROLS AND INDICATORS WORK PROPERLY ?
YES
NO
C
SHEET 4
SET RF SIGNAL GENERATOR AS FOLLOWS: OUTPUT FREQUENCY: 30 MHz OUTPUT LEVEL: -60 dBm MODULATION: AM-INT, FM OFF MODULATION FREQUENCY: 1 kHz MODULATION 0-100%: 100%
MANUALLY TUNE C-5320 TO 30 MHz
WILL THE RECEIVER TUNE ?
YES
D
SHEET 5
NO
REPLACE INTERRUPT/ RTC/RECEIVER CCA A3
E
SHEET 6
GA00383-32(A)

Figure 5-5. Troubleshooting Procedures (Sheet 1 of 8)

Table 6-1. Direction Finder (DF) Unit (Sheet 2 of 5)

REFERENCE SYMBOL OR PART NUMBER	NAME OF PARTS AND DESCRIPTION	ALL SYMBOLS AND PART NUMBERS INVOLVED	JAN OR MIL TYPE NUMBER	TOTAL NUMBER PARTS PER END ITEM
A11	CCA, PROM memory (see table 6-19): FSC 28815; P/N 10-129748-1.	A11		1
A12	CCA, MUX interface (see table 6-20): FSC 28815; P/N 10-1333256-1.	A12		1
A13	CCA, X-Y interface (see table 6-21): FSC 28815; P/N 10-129204-1.	A13		1
A16	CCA, switch driver (see table 6-22): FSC 28815; P/N 10-131974-1.	A16		1
A17	FILTER, EMI assembly (see table 6-23): FSC 28815; P/N 10-1378661.	A17		1
A18	CCA, hybrid amplifier (see table 6-24): FSC 28815; P/N 10-129189-1.	A18		1
A21	CCA, RF board, delay line carrier (see table 6-25): FSC 28815; P/N 10-129180-1.	A21		1

Table 6-1. Direction Finder (DF) Unit (Sheet 3 of 5)

REFERENCE SYMBOL OR PART NUMBER	NAME OF PARTS AND DESCRIPTION	ALL SYMBOLS AND PART NUMBERS INVOLVED	JAN OR MIL TYPE NUMBER	TOTAL NUMBER PARTS PER END ITEM
A24	CCA, RF switch (see table 6-26): FSC 28815; P/N 10-125424-2.	A24		1
A25	CCA, power supply: 120 V ac (see table 6-27); FSC 28815; P/N 10-124444-1.	A25		1
A26	CCA, digital motherboard: FSC 28815; P/N 10-127404-1.	A26		1
A27	CCA, RF motherboard (see table 6-28): FSC 28815; P/N 1-129184-1.	A27		1
A28	CCA, power supply motherboard: FSC 28815, P/N 10-127444-1.	A28		1
B1	FAN, tube axial: FSC 60856; P/N 99XU-182.	B1		1
CB1	CIRCUIT BREAKER: 3 amp; FSC 96906.	CB1	MS 26574-3	1
FL1, FL2	FILTER, RFI: FSC 12294; P/N 9001-100-1023.	FL1, FL2		2

Table 6-1. Direction Finder (DF) Unit (Sheet 4 of 5)

REFERENCE SYMBOL OR PART NUMBER	NAME OF PARTS AND DESCRIPTION	ALL SYMBOLS AND PART NUMBERS INVOLVED	JAN OR MIL TYPE NUMBER	TOTAL NUMBER PARTS PER END ITEM
W1	CABLE, servo input (see table 6-2): FSC 28815; P/N 10-136772-1.	W1		1
W2	CABLE ASSEMBLY (see table 6-3): FSC 28815; P/N 10-136774-1.	W2		1
W3	CABLE ASSEMBLY (see table 6-3): FSC 28815; P/N 10-136774-2.	W3		1
W4	CABLE ASSEMBLY (see table 6-4): FSC 28815; P/N 10-136773-1.	W4		1
W5	CABLE, delay line output (see table 6-5): FSC 28815; P/N 10-136776-2.	W5		1
W6	CABLE, delay line output (see table 6-5): FSC 28815; P/N 10-136776-1.	W6		1
W7	CABLE, delay line input (see table 6-6): FSC 28815; P/N 10-136775-1.	W7		1

Table 6-1. Direction Finder (DF) Unit (Sheet 5 of 5)

REFERENCE SYMBOL OR PART NUMBER	NAME OF PARTS AND DESCRIPTION	ALL SYMBOLS AND PART NUMBERS INVOLVED	JAN OR MIL TYPE NUMBER	TOTAL NUMBER PARTS PER END ITEM
W8	CABLE, delay line input (see table 6-6): FSC 28815; P/N 10-136775-2.	W8		1
W9	CABLE, receiver interface (see table 6-7): FSC 28815; P/N 10-136778-1.	W9		1
W10	CABLE, DEMUX/RCU, MUX (see table 6-8): FSC 28815; P/N 10-136777-1.	W10		1
W11	CABLE, receiver interface (see table 6-9): FSC 28815; P/N 10-142204-1.	W11		1

Table 6-2. Servo Input Cable W1

REFERENCE SYMBOL OR PART NUMBER	NAME OF PARTS AND DESCRIPTION	ALL SYMBOLS AND PART NUMBERS INVOLVED	JAN OR MIL TYPE NUMBER	TOTAL NUMBER PARTS PER END ITEM
	CABLE, servo input: FSC 28815; P/N 10-136772-1.			
P1	CONNECTOR, receptacle: electrical; coax; FSC 26805; P/N 51-311-3188.	P1		1
P2	CONNECTOR, receptacle: electrical; coax; FSC 98291; P/N 2034-5005-00.	P2		1

Table 6-3. RF Output Cables W2, W3

REFERENCE SYMBOL OR PART NUMBER	NAME OF PARTS AND DESCRIPTION	ALL SYMBOLS AND PART NUMBERS INVOLVED	JAN OR MIL TYPE NUMBER	TOTAL NUMBER PARTS PER END ITEM
	CABLES, RF output: FSC 28815; P/N 10-136774-1, -2.			
P1	CONNECTOR, plug: electrical; coax; FSC 16733; P/N 700473.	P1		1
P2	CONNECTOR, receptacle: electrical; FSC 26805; P/N 2004-7985-00.	P2		1

Table 6-6. Delay Line Input Cables W7, W8

REFERENCE SYMBOL OR PART NUMBER	NAME OF PARTS AND DESCRIPTION	ALL SYMBOLS AND PART NUMBERS INVOLVED	JAN OR MIL TYPE NUMBER	TOTAL NUMBER PARTS PER END ITEM
	CABLES, delay line input: FSC 28815; P/N 10-136775-1, -2.			
P1, P2	CONNECTOR, plug: electrical; coax; FSC 16733; P/N 700473.	P1, P2		2

Table 6-7. Receiver Interface Cable W9

REFERENCE SYMBOL OR PART NUMBER	NAME OF PARTS AND DESCRIPTION	ALL SYMBOLS AND PART NUMBERS INVOLVED	JAN OR MIL TYPE NUMBER	TOTAL NUMBER PARTS PER END ITEM
	CABLE, receiver interface: FSC 28815; P/N 10-136778-1.			
J5	CONNECTOR, receptacle: electrical; 25-socket; FSC 71468; P/N DBM-25S.	J5		1

Table 6-10. Front Panel Plug-in A1

REFERENCE SYMBOL OR PART NUMBER	NAME OF PARTS AND DESCRIPTION	ALL SYMBOLS AND PART NUMBERS INVOLVED	JAN OR MIL TYPE NUMBER	TOTAL NUMBER PARTS PER END ITEM
	PANEL, front: FSC 28815; P/N 10-136620-1.			
A1A1	CCA, front panel (see table 6-11): FSC 28815; P/N 10-124484-1.	A1A1		1
A1A2	CCA, front panel control (see table 6-12): FSC 28815; P/N 10-124464-1.	A1A2		1
A1A3	ENCODER: 82-count; FSC 22978; P/N 921AQ-086-.5.	A1A3		1
A1A4	CCA, front panel motherboard: FSC 28815; P/N 10-127384-1.	A1A4		1
A1J1	JACK, telephone: FSC 28815; P/N 17-123666-1.	A1J1		1
A1P1	CONNECTOR, plug: electrical; FSC 53387; P/N 3421-6000.	A1P1		1
A1R1	RESISTOR, variable: composition; 10K ohms; 10%; 1/2W; FSC 81349.	A1R1	RV6NAYSD103A	1

Table 6-11. Front Panel CCA A1A1 (Sheet 1 of 3)

REFERENCE SYMBOL OR PART NUMBER	NAME OF PARTS AND DESCRIPTION	ALL SYMBOLS AND PART NUMBERS INVOLVED	JAN OR MIL TYPE NUMBER	TOTAL NUMBER PARTS PER END ITEM
A1A1	CCA, front panel: FSC 28815; P/N 10-124484.			
CR1	DIODE, semiconductor device: FSC 04713; P/N IN5256.	CR1		1
C1	CAPACITOR, fixed: ceramic; .1 uF; 20%; 100V; FSC 51642; P/N 200-100-601-104M.	C1		1
DS2 thru DS18	DIODE, light emitting: P/N 5082-4860.	DS2, DS3, DS4, DS5, DS6, DS7, DS8, DS9, DS10, DS11, DS12, DS13, DS14, DS15, DS16, DS17, DS18		17
DS 19 thru DS26	GAS DISCHARGE DISPLAY: FSC 73138; P/N SP-332.	DS19, DS20, DS21, DS22, DS23, DS24, DS25, DS26		8
Q1	TRANSISTOR, NPN: FSC 04713; P/N MPS-D01.	Q1		1
R1	RESISTOR, fixed: composition; 43K ohms; 5%; 1/8W; FSC 81349.	R1	RCR05G433JM	1

Table 6-12. Front Panel Control CCA A1A2 (Sheet 1 of 4)

REFERENCE SYMBOL OR PART NUMBER	NAME OF PARTS AND DESCRIPTION	ALL SYMBOLS AND PART NUMBERS INVOLVED	JAN OR MIL TYPE NUMBER	TOTAL NUMBER PARTS PER END ITEM
	CCA, front panel control: FSC 28815; P/N 10-124464-1.			
C1	CAPACITOR, fixed: electrolytic; 22 uF; 10%; 15V; FSC 81349.	C1	M39003/01-2271	1
C3, C4, C6	CAPACITOR, fixed: ceramic;.1 uF; 20%; 100V; FSC 51642; P/N 200-100-601-104M.	C3, C4, C6		3
J1	CONNECTOR, receptacle: electrical; 76-socket; .025 sq; FSC 00779; P/N 3-86063-4.	J1		1
Q1, Q3, Q5, Q7, Q11, Q13, Q15, Q17, Q19, Q21, Q23, Q25, Q27, Q29, Q31	TRANSISTOR, NPN: FSC 04713; P/N MPS-D01.	Q1, Q3, Q5, Q7, Q11, Q13, Q15, Q17, Q19, Q21, Q23, Q25, Q27, Q29, Q31		16

Table 6-12. Front Panel Control CCA A1A2 (Sheet 2 of 4)

REFERENCE SYMBOL OR PART NUMBER	NAME OF PARTS AND DESCRIPTION	ALL SYMBOLS AND PART NUMBERS INVOLVED	JAN OR MIL TYPE NUMBER	TOTAL NUMBER PARTS PER END ITEM
Q2, Q4, Q6, Q8, Q10, Q14, Q16, Q18, Q20, Q22, Q24, Q26, Q28, Q30, Q32	TRANSISTOR, PNP: FSC 80131; P/N 2N3497.	Q2, Q4, Q6, Q8, Q10, Q14, Q16, Q18, Q20, Q22, Q24, Q26, Q28, Q30, Q32		16
R1, R4, R7, R10, R13, R16, R19, R22, R25, R28, R31, R34, R37, R40, R43, R46	RESISTOR, fixed: composition; 7.5K ohms; 5%; 1/8W; FSC 81349.	R1, R4, R7, R10, R13, R16, R19, R22, R25, R28, R31, R34, R37, R40, R43, R46	RCR05G752JM	16
R2, R5, R8, R11, R14, R17, R20, R23, R26, R29, R32, R35, R38, R41, R44, R47	RESISTOR, fixed: composition; 180K ohms; 5%; 1/8W; FSC 81349.	R2, R5, R8, R11, R14, R17, R20, R23, R26, R29, R32, R35, R38, R41, R44, R47	RCR05G184JM	16

Table 6-13. Front Panel Interface CCA A2 (Sheet 1 of 3)

REFERENCE SYMBOL OR PART NUMBER	NAME OF PARTS AND DESCRIPTION	ALL SYMBOLS AND PART NUMBERS INVOLVED	JAN OR MIL TYPE NUMBER	TOTAL NUMBER PARTS PER END ITEM
	CCA, front panel interface: FSC 28815; P/N 10-124494-1.			
C1, C2	CAPACITOR, fixed: electrolytic; 22 uF; 10%; 15V; FSC 81349.	C1, C2	M39003/01-2271	2
C3 thru C7	CAPACITOR, fixed: ceramic; .1 uF; 20%; 100V; FSC 51642; P/N 200-100-601-104M.	C3, C4, C5, C6, C7		5
J1	CONNECTOR, receptacle: electrical; 80-socket; FSC 00779; P/N 3-86063-6.	J1		1
PS1	POWER SUPPLY: FSC 73138; P/N VC-525-01.	PS1		1
R1, R3 thru R5	RESISTOR, fixed: composition; 1K ohms; 5%; 1/8W; FSC 81349.	R1, R3, R4, R5	RCR05G102JM	4
R2	RESISTOR NETWORK, fixed: 2K ohms; 2%; 1.1W; FSC 11236; P/N 750-81-R2K.	R2		1
U1, U2, U12	CONNECTOR, receptacle: electrical; FSC 01295; P/N SN54L93J.	U1, U2, U12		3

Table 6-13. Front Panel Interface CCA A2 (Sheet 2 of 3)

REFERENCE SYMBOL OR PART NUMBER	NAME OF PARTS AND DESCRIPTION	ALL SYMBOLS AND PART NUMBERS INVOLVED	JAN OR MIL TYPE NUMBER	TOTAL NUMBER PARTS PER END ITEM
U3, U14	MICROCIRCUIT, digital: FSC 01295; P/N SN54L04J.			2
U4, U9	MICROCIRCUIT, digital: FSC 01295; P/N SN54L00J.	U4, U9		2
U5	MICROCIRCUIT, digital: FSC 34335; P/N AM25LS139DM.	U5		1
U6	MICROCIRCUIT, digital: FSC 34335; P/N AM25LS157DM.	U6		1
U7, U8	MICROCIRCUIT, digital: FSC 34335; P/N AM31L01DM.	U7, U8		2
U10	MICROCIRCUIT, digital: FSC 01295; P/N SN54LS73AJ.	U10		1
U11	MICROCIRCUIT, digital: FSC 01295; P/N SN54L30J.	U11		1
U13	MICROCIRCUIT, digital: FSC 27014; P/N DM7096J.	U13		1
U15	MICROCIRCUIT, digital: FSC 01295; P/N SN54L74J.	U15		1
U16	MICROCIRCUIT, digital: FSC 01295; P/N SN54L10J.	U16		1

Table 6-13. Front Panel Interface CCA A2 (Sheet 3 of 3)

REFERENCE SYMBOL OR PART NUMBER	NAME OF PARTS AND DESCRIPTION	ALL SYMBOLS AND PART NUMBERS INVOLVED	JAN OR MIL TYPE NUMBER	TOTAL NUMBER PARTS PER END ITEM
U17	MICROCIRCUIT, digital: FSC 01295; P/N SN5416J.	U17		1
U18	MICROCIRCUIT, digital: FSC 01295; P/N SN54LS21J.	U18		1

Table 6-14. Interrupt/RTC/Receiver CCA A3 (Sheet 1 of 4)

REFERENCE SYMBOL OR PART NUMBER	NAME OF PARTS AND DESCRIPTION	ALL SYMBOLS AND PART NUMBERS INVOLVED	JAN OR MIL TYPE NUMBER	TOTAL NUMBER PARTS PER END ITEM
	CCA, interrupt/RTC/receiver: FSC 28815; P/N 10-131954-1.			
C1	CAPACITOR, fixed: electrolytic; 22 uF; 20%; 15V; FSC 81349.	C1	M39003/01-2272	1
C2 thru C9	CAPACITOR, fixed: ceramic; .1 uF; 2%; 100V; FSC 51642; P/N 200-100-601-104M.	C2, C3, C4, C5, C6, C7, C8, C9		8
C10	CAPACITOR, fixed: electrolytic; 10 uF; 10%; 20V; FSC 81349.	C10	M39003/01-2286	1
C12, C13	CAPACITOR, fixed: ceramic; .01 uF; FSC 51642; P/N 200-050-601-103M.	C12, C13		2
C14 thru C19	CAPACITOR, fixed: ceramic; .01 uF; 10%; 100V; FSC 81349.	C14, C15, C16, C17, C18, C19	M39014/01-1455	6
J1	CONNECTOR, receptacle: electrical; 80-socket; FSC 00779; P/N 3-86063-6.	J1		1
J2	HEADER: 26-pin; FSC 00779; P/N 1-87230-3.	J2		1

Table 6-14. Interrupt/RTC/Receiver CCA A3 (Sheet 4 of 4)

REFERENCE SYMBOL OR PART NUMBER	NAME OF PARTS AND DESCRIPTION	ALL SYMBOLS AND PART NUMBERS INVOLVED	JAN OR MIL TYPE NUMBER	TOTAL NUMBER PARTS PER END ITEM
XQ1	MOUNTING PAD: FSC 13103; P/N 7717-15N.	XQ1		1
XU18	MOUNTING PAD: FSC 13103; P/N 7717-8N.	XU18		1

Table 6-15. Microprocessor CCA A5 (Sheet 1 of 5)

REFERENCE SYMBOL OR PART NUMBER	NAME OF PARTS AND DESCRIPTION	ALL SYMBOLS AND PART NUMBERS INVOLVED	JAN OR MIL TYPE NUMBER	TOTAL NUMBER PARTS PER END ITEM
	CCA, microprocessor: FSC 28815; P/N 10-129734-1.			
C1, C7, C13, C15	CAPACITOR, fixed: electrolytic; 22 uF; 10%; 15V; FSC 81349.	C1, C7, C13, C15	M39003/01-2271	4
C2 thru C4, C6, C8, C9, C11, C12, C16 thru C20	CAPACITOR, fixed: ceramic; .1 uF; 2%; 100V; FSC 51642; P/N 200-100-601-104M.	C2, C3, C4, C6, C8, C9, C11, C12, C16, C17, C18, C19, C20		13
C5	CAPACITOR, fixed: ceramic; FSC 51642; P/N 200-050-602-103M.	C5		1
C10, C14	CAPACITOR, fixed: ceramic; FSC 51642; P/N 300-050-601-105M.	C10, C14		2
CR1	DIODE, semiconductor device: FSC 81349.	CR1	IN4148	1
J1	CONNECTOR, receptacle: electrical; 80-socket; .025 sq; FSC 00779; P/N 3-86063-6.	J1		1

Table 6-16. DEMUX/RCU CCA A6 (Sheet 1 of 3)

REFERENCE SYMBOL OR PART NUMBER	NAME OF PARTS AND DESCRIPTION	ALL SYMBOLS AND PART NUMBERS INVOLVED	JAN OR MIL TYPE NUMBER	TOTAL NUMBER PARTS PER END ITEM
	CCA, DEMUX/RCU: FSC 28815; P/N 10-133260.			
C1 thru C4, C8 thru C11, C17, C18	CAPACITOR, fixed: ceramic; .1 uF; 20%; 100V; FSC 51642; P/N 200-100-601-104M.	C1, C2, C3, C4, C8, C9, C10, C11, C17, C18		10
C5, C15, C16	CAPACITOR, fixed: ceramic; 470 pF; 5%; 500V; FSC 84171; P/N DM15-471J.	C5, C15, C16		3
C6, C12, C13	CAPACITOR, fixed: ceramic; 1000 pF; 10%; 200V; FSC 81349.	C6, C12, C13	M39014/01-1237	3
C7, C14	CAPACITOR, fixed: ceramic; 10 uF; 10%; 20V; FSC 81349.	C7, C14	M39003/01-2286	2
J1	CONNECTOR, receptacle: electrical; 80-socket; .025 sq; FSC 00779; P/N 3-86063-6.	J1		1
J2	CONNECTOR, receptacle: electrical; FSC 00779; P/N 86479-3.	J2		1
R1 thru R8	RESISTOR, fixed: composition; 1K ohms; 5%; 1/4W; FSC 81349.	R1, R2, R3, R4, R5, R6, R7, R8	RCR07G102JM	8

Table 6-16. DEMUX/RCU CCA A6 (Sheet 2 of 3)

REFERENCE SYMBOL OR PART NUMBER	NAME OF PARTS AND DESCRIPTION	ALL SYMBOLS AND PART NUMBERS INVOLVED	JAN OR MIL TYPE NUMBER	TOTAL NUMBER PARTS PER END ITEM
U1	MICROCIRCUIT, digital: FSC 01295; P/N SN54L02J.	U1		1
U2	MICROCIRCUIT, digital: FSC 01295; P/N SN54L02J.	U2		1
U3	MICROCIRCUIT, digital: FSC 01295; P/N SN54LS195AJ.	U3		1
U4	MICROCIRCUIT, digital: FSC 01295; P/N SN54L85J.	U4		1
U5, U6	MICROCIRCUIT, digital: FSC 01295; P/N SN54LS73AJ.	U5, U6		2
U7, U14	MICROCIRCUIT, digital: FSC 01295; P/N SN54LS193J.	U7, U14		2
U8	MICROCIRCUIT, digital: FSC 01295; P/N SN54LS157J.	U8		1
U9	MICROCIRCUIT, digital: FSC 01295; P/N SN54LS189AJ.	U9		1
U10, U12	MICROCIRCUIT, digital: FSC 01295; P/N SN54LS04J.	U10, U12		2
U11	MICROCIRCUIT, digital: FSC 01295; P/N SN54LS00J.	U11		1

Table 6-16. DEMUX/RCU CCA A6 (Sheet 3 of 3)

REFERENCE SYMBOL OR PART NUMBER	NAME OF PARTS AND DESCRIPTION	ALL SYMBOLS AND PART NUMBERS INVOLVED	JAN OR MIL TYPE NUMBER	TOTAL NUMBER PARTS PER END ITEM
U13, U19	MICROCIRCUIT, linear: FSC 27014; P/N DS7820AJ.	U13, U19		1
U15	MICROCIRCUIT, digital: FSC 01295; P/N SN54L30J.	U15		1
U16	MICROCIRCUIT, digital: FSC 01295; P/N SN54LS138J.	U16		1
U17	MICROCIRCUIT, digital: FSC 27014; P/N DM7095J.	U17		1
U18	MICROCIRCUIT, digital: FSC 01295; P/N SN5401J.	U18		1

Table 6-17. RAM Memory CCA A7 (Sheet 1 of 2)

REFERENCE SYMBOL OR PART NUMBER	NAME OF PARTS AND DESCRIPTION	ALL SYMBOLS AND PART NUMBERS INVOLVED	JAN OR MIL TYPE NUMBER	TOTAL NUMBER PARTS PER END ITEM
	CCA, RAM memory: FSC 28815; P/N 10-129758-1.			
C1	CAPACITOR, fixed: ceramic; .1 uF; 10%; 100V; FSC 81349.	C1	M39014/02-1230	1
C2	CAPACITOR, fixed: electrolytic; 10 uF; 10%; 20V; FSC 81349.	C2	M39003/01-2286	1
C3 thru C8	CAPACITOR, fixed: ceramic; .1 uF; 20%; 50V; FSC 51642; P/N 300-50-601-105M.	C3, C4, C5, C6, C7, C8		4
C10 thru C13	CAPACITOR, fixed: ceramic; .1 uF; 20%; 100V; FSC 51642; P/N 200-100-601-104M.	C10, C11, C12, C13		7
P1	CONNECTOR, receptacle: electrical; 80-socket; FSC 00779; P/N 3-86063-6.	P1		1
R1 thru R8	RESISTOR, fixed: composition; 2K ohms; 5%; 1/4W; FSC 81349.	R1, R2, R3, R4, R5, R6, R7, R8	RCR07G202JM	8
U1, U2, U22, U23	MICROCIRCUIT, digital: FSC 27014; P/N DM7097J.	U1, U2, U22, U23		4

Table 6-17. RAM Memory CCA A7 (Sheet 2 of 2)

REFERENCE SYMBOL OR PART NUMBER	NAME OF PARTS AND DESCRIPTION	ALL SYMBOLS AND PART NUMBERS INVOLVED	JAN OR MIL TYPE NUMBER	TOTAL NUMBER PARTS PER END ITEM
U3, U21	MICROCIRCUIT, digital: FSC 01295; P/N SN5400J.	U3, U21		2
U4 thru U11, U13 thru U20	MICROCIRCUIT, digital: FSC 34335; P/N AM91L02DM.	U4, U5, U6, U7, U8, U9, U10, U11, U13, U14, U15, U16, U17, U18, U19, U20		16
U12	MICROCIRCUIT, digital: FSC 27014; P/N DM7160J.	U12		1

Table 6-18. Servo Driver CCA A9 (Sheet 1 of 4)

REFERENCE SYMBOL OR PART NUMBER	NAME OF PARTS AND DESCRIPTION	ALL SYMBOLS AND PART NUMBERS INVOLVED	JAN OR MIL TYPE NUMBER	TOTAL NUMBER PARTS PER END ITEM
	CCA, servo driver: FSC 28815; P/N 10-131964-1.			1
C1, C2	CAPACITOR, fixed: electrolytic; 22 uF; 10%; 15V; FSC 81349.	C1, C2	M39003/01-2271	2
C3, C4	CAPACITOR, fixed: electrolytic; 1.0 uF; 10%; 50V; FSC 81349.	C3, C4	M39003/01-2356	2
C5	CAPACITOR, fixed: ceramic; .01 uF; 10%; 100V; FSC 81349.	C5	M39014/01-1455	1
C6	CAPACITOR, fixed: mica; 15 ±0.5 pf; 300 V	C6		1
C7 thru C17, C20, C22, C23	CAPACITOR, fixed: ceramic; .1 uF; 20%; 100V; FSC 51642; P/N 200-100-601-104M.	C7, C8, C9, C10, C11, C12, C13, C14, C15, C16, C17, C20, C22, C23		15
18	CAPACITOR, fixed: plastic; .01 uF; 5%; 100V; FSC 53749; P/N IPE103J.	C18		1
C19	CAPACITOR, fixed: ceramic; .01 uF; 50V; FSC 51642; P/N 200-050-601-103M.	C19		1

Table 6-18. Servo Driver CCA A9 (Sheet 4 of 4)

REFERENCE SYMBOL OR PART NUMBER	NAME OF PARTS AND DESCRIPTION	ALL SYMBOLS AND PART NUMBERS INVOLVED	JAN OR MIL TYPE NUMBER	TOTAL NUMBER PARTS PER END ITEM
U12	MICROCIRCUIT, digital: FSC 01295; P/N SN54LS32J.	U12		1
U13, U15	MICROCIRCUIT, digital: FSC 01295; P/N SN54LS74AJ.	U13, U15		2
U14, U17	MICROCIRCUIT, digital: FSC 01295; P/N SN54L04J.	U14, U17		2
U16	MICROCIRCUIT, digital: FSC 27014; P/N DM54L08J.	U16		1
U18	MICROCIRCUIT, digital: FSC 01295; P/N SN54LS162AJ.	U18		1
U19	MICROCIRCUIT, digital: FSC 01295; P/N SN54490J.	U19		1
U21	MICROCIRCUIT, digital: FSC 34335; P/N AM25LS138DM.	U21		1
XU4	SOCKET, electronic component: 40-pin; FSC 00779; P/N 530018-2.	XU4		1

Table 6-19. PROM Memory CCA All (Sheet 1 of 3)

REFERENCE SYMBOL OR PART NUMBER	NAME OF PARTS AND DESCRIPTION	ALL SYMBOLS AND PART NUMBERS INVOLVED	JAN OR MIL TYPE NUMBER	TOTAL NUMBER PARTS PER END ITEM
	CCA, PROM memory: FSC 28815; P/N 10-129748-1.			1
C1, C4, C5, C6, C9 thru C13	CAPACITOR, fixed: ceramic; .1 uF; 20%; 100V; FSC 51642; P/N 200-100-601-104M.	C1, C4, C5, C6, C9, C10, C11, C12, C13		9
C2, C8	CAPACITOR, fixed: electrolytic; 1.0 uF; 10%; 50V; FSC 81349.	C2, C8	M39003/01-2356	2
C3, C7	CAPACITOR, fixed: electrolytic; 22 uF; 10%; 15V; FSC 81349.	C3, C7	M39003/01-2271	2
C10	CAPACITOR, fixed: electrolytic; 4.7 uF; 10%; 50V; FSC 81349.	C10	M39003/01-2368	1
P1, P2	CONTACT, electrical: FSC 23880; P/N CB250-2L.	P1, P2		2
P3	CONNECTOR, receptacle: electrical; 80-socket; FSC 00779; P/N 3-86063-6.	P3		1
R1 thru R6	RESISTOR, fixed: composition; 2K ohms; 5%; 1/4W; FSC 81349.	R1, R2, R3, R4, R5, R6	RCR07G202JM	6

Table 6-19. PROM Memory CCA A11 (Sheet 2 of 3)

REFERENCE SYMBOL OR PART NUMBER	NAME OF PARTS AND DESCRIPTION	ALL SYMBOLS AND PART NUMBERS INVOLVED	JAN OR MIL TYPE NUMBER	TOTAL NUMBER PARTS PER END ITEM
R7	RESISTOR, fixed: wire wound; 50 ohms; 3W; 5%; FSC 91637; P/N RS-2B/50/.5%.	R7		1
R8	RESISTOR, fixed: film; 243 ohms; 1%; 1/10W; FSC 81349.	R8	RNC55H2430FM	1
R9	RESISTOR, fixed: film; 2.05K ohms; 1%; 1/10W; FSC 81349	R9	RNC55H2051FM	1
R10	RESISTOR, fixed: composition; 1.1K ohms; 5%; 1/4W; FSC 81349	R10	RCR07G112JM	1
U1 thru U7	MICROCIRCUIT, digital: FSC 34649; P/N C2708.	U1, U2, U3, U4, U5, U6, U7		8
U9, U10	MICROCIRCUIT, digital: FSC 27014; P/N DM7097J.	U9, U10		2
U11	MICROCIRCUIT, digital: FSC 34335; P/N AM25LS138DM.	U11		1
U12	MICROCIRCUIT, digital: FSC 27014; P/N DM7160J.	U12		1
U13	MICROCIRCUIT, digital: FSC 01295; P/N SN5400J.	U13		1

Table 6-19. PROM Memory CCA A11 (Sheet 3 of 3)

REFERENCE SYMBOL OR PART NUMBER	NAME OF PARTS AND DESCRIPTION	ALL SYMBOLS AND PART NUMBERS INVOLVED	JAN OR MIL TYPE NUMBER	TOTAL NUMBER PARTS PER END ITEM
VR1	MICROCIRCUIT, linear: FSC 27014; P/N LM117KSTEEL.	VR1		1
VR2	MICROCIRCUIT, linear: FSC 27014; P/N LM120H-5.0.	VR2		1
XU1 thru XU7	SOCKET, electrical component: 24-pin; FSC 00779; P/N 530610-1.	XU1, XU2, XU3, XU4, XU5, XU6, XU7		8

Table 6-20. MUX Interface CCA A12 (Sheet 1 of 3)

REFERENCE SYMBOL OR PART NUMBER	NAME OF PARTS AND DESCRIPTION	ALL SYMBOLS AND PART NUMBERS INVOLVED	JAN OR MIL TYPE NUMBER	TOTAL NUMBER PARTS PER END ITEM
	CCA, MUX interface: FSC 28815; P/N 10-133256-1.			
C1, C6 thru C8	CAPACITOR, fixed: ceramic; .1 uF; 10%; 100V; FSC 81349.	C1, C6, C7, C8	M39014/02-1230	4
C2, C3	CAPACITOR, fixed: ceramic; 100 pF; 10%; 200V; FSC 81349.	C2, C3	M39014/02-1237	2
C4, C5	CAPACITOR, fixed: mica; 470 pF; 5%; 500V; FSC 84171; P/N DM15-471J.	C4, C5		2
C9	CAPACITOR, fixed: electrolytic; 10 uF; 10%; 20V; FSC 81349.	C9	M39003/01-2286	1
J1	CONNECTOR, receptacle: electrical; 80-socket; FSC 00779; P/N 3-86063-6.	J1		1
J2	CONNECTOR, receptacle: electrical; FSC 00779; P/N 3-86479-3.	J2		1
R1, R2	RESISTOR, fixed: composition; 1K ohms; 5%; 1/4W; FSC 81349.	R1, R2	RCR07G102JM	2

Table 6-20. MUX Interface CCA A12 (Sheet 2 of 3)

REFERENCE SYMBOL OR PART NUMBER	NAME OF PARTS AND DESCRIPTION	ALL SYMBOLS AND PART NUMBERS INVOLVED	JAN OR MIL TYPE NUMBER	TOTAL NUMBER PARTS PER END ITEM
U1	MICROCIRCUIT, digital: FSC 01295; P/N SN54L02J.	U1		1
U2, U3	MICROCIRCUIT, digital: FSC 01295; P/N SN54L193J.	U2, U3		2
U4	MICROCIRCUIT, linear: FSC 34335; P/N DM7820AJ.	U4		1
U5	MICROCIRCUIT, digital: FSC 01295; P/N SN54LS157J.	U5		1
U6	MICROCIRCUIT, digital: FSC 01295; P/N SN54LS189AJ.	U6		1
U7	MICROCIRCUIT, digital: FSC 01295; P/N SN54LS195AJ.	U7		1
U8	MICROCIRCUIT, digital: FSC 27014; P/N DM7830J.	U8		1
U9	MICROCIRCUIT, digital: FSC 01295; P/N SN54L30J.	U9		1
U10	MICROCIRCUIT, digital: FSC 01295; P/N SN54LS138J.	U10		1
U11	MICROCIRCUIT, digital: FSC 01295; P/N SN54L00J.	U11		1

Table 6-20. MUX Interface CCA A12 (Sheet 3 of 3)

REFERENCE SYMBOL OR PART NUMBER	NAME OF PARTS AND DESCRIPTION	ALL SYMBOLS AND PART NUMBERS INVOLVED	JAN OR MIL TYPE NUMBER	TOTAL NUMBER PARTS PER END ITEM
U12	MICROCIRCUIT, digital: FSC 01295; P/N SN54L04J.	U12		1

Table 6-21. X-Y Interface CCA A13 (Sheet 1 of 6)

REFERENCE SYMBOL OR PART NUMBER	NAME OF PARTS AND DESCRIPTION	ALL SYMBOLS AND PART NUMBERS INVOLVED	JAN OR MIL TYPE NUMBER	TOTAL NUMBER PARTS PER END ITEM
	CCA, X-Y interface: FSC 28815; P/N 10-129204-1.			
CR1, CR2, CR4, CR5, CR7 thru CR10	DIODE, semiconductor device: FSC 80131; P/N IN751A.	CR1, CR2, CR4, CR5, CR7, CR8, CR9, CR10		8
CR3	DIODE, semiconductor device: FSC 80131; P/N IN4148.	CR3		1
C1, C2	CAPACITOR, fixed: electrolytic; 22 uF; 10%; 15V; FSC 81349.	C1, C2	M39003/01-2271	2
C3, C4	CAPACITOR, fixed: electrolytic; 4.7 uF; 10%; 50V; FSC 81349.	C3, C4	M39003/01-2368	2
C5 thru C9, C17 thru C27	CAPACITOR, fixed: ceramic; .1 uF; 2%; 100V; FSC 51642; P/N 200-100-601-104M.	C5, C6, C7, C8, C9, C17, C18, C19, C20, C21, C22, C23, C24, C25, C26, C27		16
C10	CAPACITOR, fixed: ceramic; .01 uF; 10%; 100V; FSC 81349.	C10	M39014/01-1455	1

Table 6-21. X-Y Interface CCA A13 (Sheet 2 of 6)

REFERENCE SYMBOL OR PART NUMBER	NAME OF PARTS AND DESCRIPTION	ALL SYMBOLS AND PART NUMBERS INVOLVED	JAN OR MIL TYPE NUMBER	TOTAL NUMBER PARTS PER END ITEM
C12, C13, C14	CAPACITOR, fixed: mica; 36 pF; 5%; 300V; FSC 84171; P/N DM5EC360J.	C12, C13, C14		3
C15, C16*	CAPACITOR, fixed: mica; 36 pF; 5%; 300V; FSC 84171; P/N DM5EC360J.	C15, C16*		2
J1	CONNECTOR, receptacle: electrical; 80-socket; FSC 00779; P/N 3-86063-6.	J1		1
J2	CONNECTOR, receptacle: electrical; FSC 00779; P/N 86479-3.	J2		1
Q1	TRANSISTOR: FSC 80131; P/N 2N4978.	Q1		1
Q2	TRANSISTOR: FSC 80131, P/N 2N2907.	Q2		1
R1, R33	RESISTOR, fixed: composition; 5.1K ohms; 5%; 1/4W; FSC 81349.	R1, R33	RCR07G512JM	2
R2	RESISTOR, variable: wire wound; 5K ohms; 5%; 3/4W; FSC 81349.	R2	M39015/3-009XM	1

*Indicates these parts are optional. See paragraph 4-4(9).

Table 6-21. X-Y Interface CCA A13 (Sheet 3 of 6)

REFERENCE SYMBOL OR PART NUMBER	NAME OF PARTS AND DESCRIPTION	ALL SYMBOLS AND PART NUMBERS INVOLVED	JAN OR MIL TYPE NUMBER	TOTAL NUMBER PARTS PER END ITEM
R3	RESISTOR, fixed: composition; 1.6K ohms; 5%; 1/4W; FSC 81349.	R3	RCR07G162JM	1
R4, R26, R28	RESISTOR, variable: wire wound; 10K ohms; 5%; 3/4W; FSC 81349.	R4, R26, R28	M3905/3-010XM	3
R5	RESISTOR, fixed: composition; 2K ohms; 5%; 1/4W; FSC 81349.	R5	RCR07G202JM	1
R6	RESISTOR, fixed: composition; 1K ohms; 5%; 1/4W; FSC 81349.	R6	RCR07G102JM	1
R7, R8	RESISTOR, fixed: composition; 100K ohms; 5%; 1/4W; FSC 81349.	R7, R8	RCR07G104JM	2
R9 thru R11	RESISTOR, fixed: film; 100K ohms; 1%; 1/10W; FSC 81349.	R9, R10, R11	RNC55H1003FS	3
R12	RESISTOR, fixed: composition; 3.3K ohms; 5%; 1/4W; FSC 81349.	R12	RCR07G332JM	1
R13, R52*	RESISTOR, fixed: film; 2.49K ohms; 1%; 1/10W; FSC 81349.	R13, R52*	RNC55H2491FS	2

*Indicates these parts are optional. See paragraph 4-4(9).

Table 6-21. X-Y Interface CCA A13 (Sheet 4 of 6)

REFERENCE SYMBOL OR PART NUMBER	NAME OF PARTS AND DESCRIPTION	ALL SYMBOLS AND PART NUMBERS INVOLVED	JAN OR MIL TYPE NUMBER	TOTAL NUMBER PARTS PER END ITEM
R15, R16, R23, R24	RESISTOR, fixed: film; 499 ohms; 1%; 1/10W; FSC 81349.	R15, R16, R23, R24	RNC55H4990FS	4
R17, R31, R35	RESISTOR, fixed: compositon; 100 ohms; 5%; 1/4W; FSC 81349.	R17, R31, R35	RCR07G101JM	3
R18, R42	RESISTOR, fixed: film; 2.49K ohms; 1%; 1/10W; FSC 81349.	R18, R42	RNC55H2491FS	2
R19, R36, R39	RESISTOR, fixed: composition; 2.4K ohms; 5%; 1/4W; FSC 81349.	R19, R36, R39	RCR07G242JM	3
R20	RESISTOR, fixed: composition; 560K ohms; 5%; 1/4W; FSC 81349.	R20	RCR07G564JM	1
R21, R22, R27, R32	RESISTOR, fixed: composition; 10K ohms; 5%; 1/4W; FSC 81349.	R21, R22, R27, R32	RCR07G103JM	4
R29, R30	RESISTOR, fixed: composiiton; 27K ohms; 5%; 1/4W; FSC 81349.	R29, R30	RCR07G273JM	2
R37, R40	RESISTOR, fixed: film; 1.5K ohms; 1%; 1/10W; FSC 81349.	R37, R40	RNC55H1501FS	2
R38	RESISTOR, variable: wire wound; 1K ohms; 5%; 3/4W; FSC 81349.	R38	M39015/3-007XM	1

Table 6-21. X-Y Interface CCA A13 (Sheet 5 of 6)

REFERENCE SYMBOL OR PART NUMBER	NAME OF PARTS AND DESCRIPTION	ALL SYMBOLS AND PART NUMBERS INVOLVED	JAN OR MIL TYPE NUMBER	TOTAL NUMBER PARTS PER END ITEM
R41	RESISTOR, fixed: film; 2.55K ohms; 1%; 1/10W; FSC 81349.	R41	RNC55H2551FS	1
R43, R45	RESISTOR, fixed: composition; 1K ohms; 5%; 1/8W; FSC 81349.	R43, R45	RCR05G102JM	2
R44, R50	RESISTOR, fixed: composition; 1.5K ohms; 5%; 1/4W; FSC 81349.	R44, R50	RCR07G152JM	2
R46, R47	RESISTOR, fixed: composition; 3.9K ohms; 5%; 1/8W; FSC 81349.	R46, R47	RCR05G392JM	2
R48	RESISTOR, fixed: composition; 2.7K ohms; 5%; 1/8W; FSC 81349.	R48	RCR05G272JM	1
R49	RESISTOR, fixed: composition; 100K ohms; 5%; 1/8W; FSC 81349.	R49	RCR05G104JM	1
TP1 thru TP4	CONTRACT, electrical: FSC 23880; P/N CB250-L.	TP1, TP2, TP3, TP4		4
U1, U4	MICROCIRCUIT, linear: FSC 52063; P/N XR-4136M.	U1, U4		2

Table 6-21. X-Y Interface CCA A13 (Sheet 6 of 6)

REFERENCE SYMBOL OR PART NUMBER	NAME OF PARTS AND DESCRIPTION	ALL SYMBOLS AND PART NUMBERS INVOLVED	JAN OR MIL TYPE NUMBER	TOTAL NUMBER PARTS PER END ITEM
U2*	MICROCIRCUIT, digital: FSC 34649; P/N C8255A.	U2*		1
U3, U10*	CONVERTER, D/A: FSC 06665; P/N DAC-08Q.	U3, U10*		2
U5, U11, U12	CONVERTER, D/A: FSC 06665; P/N DAC-08Q.	U5, U11, U12		3
U6	MICROCIRCUIT, digital: FSC 34649; P/N D8255A.	U6		1
U7, U9	MICROCIRCUIT, digital: FSC 01295; P/N SN54LS04J.	U7, U9		2
U8	MICROCIRCUIT, digital: FSC 01295; P/N SN54L00J.	U8		1
U13	MICROCIRCUIT, digital: FSC 01295; P/N SN54L30J.	U13		1

*Indicates these parts are optional. See paragraph 4-4(9).

Table 6-22. Switch Driver CCA A16 (Sheet 1 of 4)

REFERENCE SYMBOL OR PART NUMBER	NAME OF PARTS AND DESCRIPTION	ALL SYMBOLS AND PART NUMBERS INVOLVED	JAN OR MIL TYPE NUMBER	TOTAL NUMBER PARTS PER END ITEM
	CCA, switch driver: FSC 28815; P/N 10-131974-1.			
C1	CAPACITOR, fixed: electrolytic; 22 uF; 10%; 15V; FSC 81349.	C1	M39003/01-2271	1
C2, C3, C4, C11	CAPACITOR, fixed: ceramic; .1 uF; 2%; 100V; FSC 51642; P/N 200-100-601-104M.	C2, C3, C4, C11		4

Table 6-22. Switch Driver CCA A16 (Sheet 4 of 4)

REFERENCE SYMBOL OR PART NUMBER	NAME OF PARTS AND DESCRIPTION	ALL SYMBOLS AND PART NUMBERS INVOLVED	JAN OR MIL TYPE NUMBER	TOTAL NUMBER PARTS PER END ITEM
U13	MICROCIRCUIT, digital: FSC 01295; P/N SN54LS00J.	U13		1
U14 thru U18	RESISTOR NETWORK: fixed; 2K ohms; 2%; 1.1W; FSC 11236; P/N 750-81-R2K.	U14, U15, U16, U17, U18		5
U19 thru U28	RESISTOR NETWORK: fixed; 470 ohms, 2%; 1.1W; FSC 11236; P/N 750-83-R470.	U19, U20, U21, U22, U23, U24, U25, U26, U27, U28		10
U29 thru U33	RESISTOR NETWORK: fixed; 4.7K ohms, 2%; 1.1W; FSC 11236; P/N 750-81-R4.7K.	U29, U30, U31, U32, U33		5

Table 6-23. EMI Filter CCA A17 (Sheet 1 of 2)

REFERENCE SYMBOL OR PART NUMBER	NAME OF PARTS AND DESCRIPTION	ALL SYMBOLS AND PART NUMBERS INVOLVED	JAN OR MIL TYPE NUMBER	TOTAL NUMBER PARTS PER END ITEM
	CCA, EMI filter: FSC 28815; P/N 10-137866-1.			
FL1 thru FL40	FILTER, RFI: 15A; 50 WVdc; FSC 72982; P/N 9050-000-0000.	FL1, FL2, FL3, FL4, FL5, FL6, FL7, FL8, FL9, FL10, FL11, FL12, FL13, FL14, FL15, FL16, FL17, FL18, FL19, FL20, FL21, FL22, FL23, FL24, FL25, FL26, FL27, FL28, FL29, FL30, FL31, FL32, FL33, FL34, FL35, FL36, FL37, FL38, FL39, FL40		40
L1	FILTER, inductor: FSC 28815; P/N 08-138000-1.	L1		1
L2, L3	FILTER, inductor: FSC 28815; P/N 08-138000-2.	L2, L3		2

Table 6-23. EMI Filter CCA A17 (Sheet 2 of 2)

REFERENCE SYMBOL OR PART NUMBER	NAME OF PARTS AND DESCRIPTION	ALL SYMBOLS AND PART NUMBERS INVOLVED	JAN OR MIL TYPE NUMBER	TOTAL NUMBER PARTS PER END ITEM
P1, P2	CONNECTOR, receptacle: electrical; 80-socket; FSC 00779; P/N 3-86063-6.	P1, P2		2

Table 6-24. Hybrid-Amplifier CCA A18 (Sheet 1 of 4)

REFERENCE SYMBOL OR PART NUMBER	NAME OF PARTS AND DESCRIPTION	ALL SYMBOLS AND PART NUMBERS INVOLVED	JAN OR MIL TYPE NUMBER	TOTAL NUMBER PARTS PER END ITEM
	CCA, hybrid-amplifier: FSC 28815; P/N 10-129189.			
CR1 thru CR24	DIODE, semiconductor device: FSC 54893; P/N 5082-3080.	CR1, CR2, CR3, CR4, CR5, CR6, CR7, CR8, CR9, CR10, CR11, CR12, CR13, CR14, CR15, CR16, CR17, CR18, CR19, CR20, CR21, CR22, CR23, CR24		24
C1 thru C4, C16 thru C24	CAPACITOR, fixed: ceramic; .01 uF; 10%; 100V; FSC 81349.	C1, C2, C3, C4, C16, C17, C18, C19, C20, C21, C22, C23, C24	M39014/01-1455	13
C5, C7	CAPACITOR, fixed: ceramic; 470 pF; 1%; 50V; FSC 32499; P/N 10L2051A471F.	C5, C7		2
C6	CAPACITOR, fixed: ceramic; 680 pF; 1%; 50V; FSC 32499; P/N 10L2051A681F.	C6		1

Table 6-24. Hybrid-Amplifier CCA A18 (Sheet 2 of 4)

REFERENCE SYMBOL OR PART NUMBER	NAME OF PARTS AND DESCRIPTION	ALL SYMBOLS AND PART NUMBERS INVOLVED	JAN OR MIL TYPE NUMBER	TOTAL NUMBER PARTS PER END ITEM
C8, C10	CAPACITOR, fixed: mica; 12 pF; FSC 84171; P/N DM5CC120J.	C8, C10		2
C9	CAPACITOR, fixed: mica; 24 pF; FSC 84171; P/N DM5CC240J.	C9		1
C11, C12, C14	CAPACITOR, fixed: ceramic; .1 uF; 10%; 50V; FSC 81349.	C11, C12, C14	M39014/01-1473	3
C13	CAPACITOR, fixed: mica; 5 pF; tol .5 pF; 300V; FSC 84171; P/N DM5CC050D.	C13		1
C15	CAPACITOR, fixed: mica; 82 pF; 5%; 500V; FSC 84171; P/N DM15-820J.	C15		1
HY1	HYBRID: 180°; 2-200 MHz; FSC 21912; P/N HH-106(9419).	HY1		1
J1 thru J4	CONNECTOR, receptacle: electrical; coax; FSC 16733; P/N 700214.	J1, J2, J3, J4		4
L1, L2	COIL, RF: 1 uH; 10%; FSC 83125; P/N SWD1.0.	L1, L2		2

Table 6-24. Hybrid-Amplifier CCA A18 (Sheet 3 of 4)

REFERENCE SYMBOL OR PART NUMBER	NAME OF PARTS AND DESCRIPTION	ALL SYMBOLS AND PART NUMBERS INVOLVED	JAN OR MIL TYPE NUMBER	TOTAL NUMBER PARTS PER END ITEM
L3, L4	COIL, inductor: 52 MH; FSC 28815; P/N 16-158165-1.	L3, L4		2
L5 thru L30	COIL, RF: fixed; 33 uH; 10%; FSC 83125; P/N DD-33.0.	L5, L6, L7, L8, L9, L10, L11, L12, L13, L14, L15, L16, L17, L18, L19, L20, L21, L22, L23, L24, L25, L26, L27, L28, L29, L30		26
Q1	MICROCIRCUIT, linear: FSC 27014; P/N LM741AH.	Q1		1
R1, R3	RESISTOR, fixed: composition; 20 ohms; 5%; 1/8W; FSC 81349.	R1, R3	RCR05G200JM	2
R2	RESISTOR, fixed: composition; 10 ohms; 5%; 1/8W; FSC 81349.	R2	RCR05G100JM	1
R4	RESISTOR, fixed: composition; 300 ohms; 5%; 1/8W; FSC 81349.	R4	RCR05G301JM	1
R5, R15	RESISTOR, fixed: composition; 51 ohms; 5%; 1/8W; FSC 81349.	R5, R15	RCR05G510JM	2

Table 6-24. Hybrid-Amplifier CCA A18 (Sheet 4 of 4)

REFERENCE SYMBOL OR PART NUMBER	NAME OF PARTS AND DESCRIPTION	ALL SYMBOLS AND PART NUMBERS INVOLVED	JAN OR MIL TYPE NUMBER	TOTAL NUMBER PARTS PER END ITEM
R6, R16	RESISTOR, fixed: composition; 100 ohms; 5%; 1/4W; FSC 81349.	R6, R16	RCR07G101JM	2
R7	RESISTOR, fixed: composition; 470 ohms; 5%; 1/8W; FSC 81349.	R7	RCR05G471JM	1
R8, R14	RESISTOR, fixed: composition; 510 ohms; 5%; 1/8W; FSC 81349.	R8, R14	RCR05G511JM	2
R9	RESISTOR, fixed: composition; 2.2K ohms; 5%; 1/8W; FSC 81349.	R9	RCR05G222JM	1
R10	RESISTOR fixed: composition; 5.1 ohms; 5%; 1/8W; FSC 81349.	R10	RCR05G5R1JM	1
R11, R12	RESISTOR fixed: composition; 7.5 ohms; 5%; 1/8W; FSC 81349.	R11, R12	RCR05G7R5JM	2
R13	RESISTOR fixed: composition; 68 ohms; 5%; 1/8W; FSC 81349.	R13	RCR05G680JM	1
Y1	OSCILLATOR, RF: 30 MHz; FSC 01537; P/N K1100A-30MHz.	Y1		1

Table 6-25. Delay Line CCA A21 (Sheet 1 of 2)

REFERENCE SYMBOL OR PART NUMBER	NAME OF PARTS AND DESCRIPTION	ALL SYMBOLS AND PART NUMBERS INVOLVED	JAN OR MIL TYPE NUMBER	TOTAL NUMBER PARTS PER END ITEM
	CCA, delay line: FSC 28815; P/N 10-129180-1.			
A1	DELAY LINE, 0.1 ns: FSC 28815; P/N 10-133018-3.	A1		1
A2	DELAY LINE, 0.1 ns: FSC 28815; P/N 10-133018-4.	A2		1
C1 thru C16	CAPACITOR, fixed: ceramic; .01 uF; 10%; FSC 81349.	C1, C2, C3, C4, C5, C6, C7, C8, C9, C10, C11, C12, C13, C14, C15, C16	M39014/01-1455	16
J1 thru J4	CONNECTOR, RF: FSC 16733; P/N 700214.	J1, J2, J3, J4		4
L1 thru L26	INDUCTOR: 33 uH; FSC 72259; P/N SWD33.0.	L1, L2, L3, L4, L5, L6, L7, L8, L9, L10, L11, L12, L13, L14, L15, L16, L17, L18, L19, L20, L21, L22, L23, L24, L25, L26		26

Table 6-25. Delay Line CCA A21 (Sheet 2 of 2)

REFERENCE SYMBOL OR PART NUMBER	NAME OF PARTS AND DESCRIPTION	ALL SYMBOLS AND PART NUMBERS INVOLVED	JAN OR MIL TYPE NUMBER	TOTAL NUMBER PARTS PER END ITEM
P1	CONNECTOR, receptacle: electrical; 80-pin; FSC 00779; P/N 3-86063-6.	P1		1

Table 6-26. RF Switch CCA A24 (Sheet 1 of 2)

REFERENCE SYMBOL OR PART NUMBER	NAME OF PARTS AND DESCRIPTION	ALL SYMBOLS AND PART NUMBERS INVOLVED	JAN OR MIL TYPE NUMBER	TOTAL NUMBER PARTS PER END ITEM
	CCA, RF switch: FSC 28815; P/N 10-125424-1.			
CR1 thru CR32	DIODE, semiconductor device: FSC 54893; P/N 5082-3080.	CR1, CR2, CR3, CR4, CR5, CR6, CR7, CR8, CR9, CR10, CR11, CR12, CR13, CR14, CR15, CR16, CR17, CR18, CR19, CR20, CR21, CR22, CR23, CR24, CR25, CR26, CR27, CR28, CR29, CR30, CR31, CR32		32
C1 thru C8	CAPACITOR, fixed: ceramic; .1 uF; 10%; FSC 81349.	C1, C2, C3, C4, C5, C6, C7, C8	M39014/01-1473	8
J1 thru J8	CONNECTOR, receptacle: electrical; FSC 16733; P/N 700214.	J1, J2, J3, J4, J5, J6, J7, J8		8

Table 6-26. RF Switch CCA A24 (Sheet 2 of 2)

REFERENCE SYMBOL OR PART NUMBER	NAME OF PARTS AND DESCRIPTION	ALL SYMBOLS AND PART NUMBERS INVOLVED	JAN OR MIL TYPE NUMBER	TOTAL NUMBER PARTS PER END ITEM
L1 thru L34	COIL, RF: fixed; 33 MH; 10%; FSC 32159; P/N 1A3301M.	L1, L2, L3, L4, L5, L6, L7, L8, L9, L10, L11, L12, L13, L14, L15, L16, L17, L18, L19, L20, L21, L22, L23, L24, L25, L26, L27, L28, L29, L30, L31, L32, L33, L34		34
P1	CONNECTOR, receptacle: electrical; 80-socket; FSC 00779; P/N 3-86063-2.	P1		1
P2	CONNECTOR, receptacle: electrical; FSC 00779; P/N 3-86063-6.	P2		1

Table 6-27. Power Supply CCA A25 (Sheet 1 of 2)

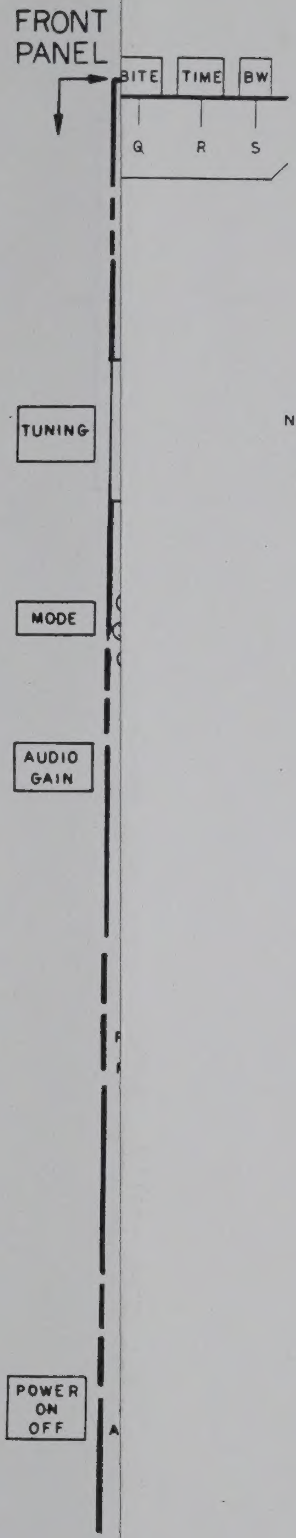
REFERENCE SYMBOL OR PART NUMBER	NAME OF PARTS AND DESCRIPTION	ALL SYMBOLS AND PART NUMBERS INVOLVED	JAN OR MIL TYPE NUMBER	TOTAL NUMBER PARTS PER END ITEM
	CCA, power supply: FSC 28815; P/N 10-124444.			
CR1	DIODE, semiconductor device: FSC 14444; P/N MPT-5.	CR1		1
CR2, CR3	DIODE, semiconductor device: FSC 14444; P/N MPT-15.	CR2, CR3		2
C1	CAPACITOR, fixed: electrolytic; 22 uF; 10%; 15V; FSC 81349.	C1	M39003/01-2271	1
J1	CONNECTOR, receptacle: electrical; 80-socket; FSC 00779; P/N 3-86063-6.	J1		1
PS1	POWER SUPPLY: preregulator; FSC 31557; P/N SS120VAC300.	PS1		1
PS2	POWER SUPPLY: preregulator; FSC 31557; P/N SS120VAC010.	PS2		1
PS3	POWER SUPPLY: linear; generator; FSC 31557; P/N SS120VAC001.	PS3		1

Table 6-27. Power Supply CCA A25 (Sheet 2 of 2)

REFERENCE SYMBOL OR PART NUMBER	NAME OF PARTS AND DESCRIPTION	ALL SYMBOLS AND PART NUMBERS INVOLVED	JAN OR MIL TYPE NUMBER	TOTAL NUMBER PARTS PER END ITEM
PS4	POWER SUPPLY: linear; transformer; FSC 31557; P/N RC18V18V1.	PS4		1
PS5	POWER SUPPLY: linear; transformer; FSC 31557; P/N RC15V15V1.	PS5		1
PS6	POWER SUPPLY: linear; transformer; FSC 31557; P/N R5V2.	PS6		1

Table 6-28. RF Motherboard A27

REFERENCE SYMBOL OR PART NUMBER	NAME OF PARTS AND DESCRIPTION	ALL SYMBOLS AND PART NUMBERS INVOLVED	JAN OR MIL TYPE NUMBER	TOTAL NUMBER PARTS PER END ITEM
	RF MOTHERBOARD: FSC 28815; P/N 10-129184-4.			
C1 thru C4	CAPACITOR, fixed: electrolytic; 22 uF; 50 Vdc; FSC 56289; P/N 501D226F050MM	C1, C2, C3, C4		4
J1 thru J6	CONNECTOR, receptacle: electrical; coax; FSC 16733; P/N 700213.	J1, J2, J3, J4, J5, J6		6
W1	CABLE ASSEMBLY (see table 6-29): FSC 28815; P/N 10-136771-1.	W1		1
W2	CABLE ASSEMBLY (see table 6-29): FSC 28815; P/N 10-136771-2.	W2		1
W3	CABLE ASSEMBLY (see table 6-29): FSC 28815; P/N 10-136771-3.	W3		1
W4	CABLE ASSEMBLY (see table 6-29): FSC 28815; P/N 10-136771-4.	W4		1


FRONT
PANEL
BITE
TIME
BW
Q
R
S
TUNING
MODE
AUDIO
GAIN
POWER
ON
OFF
A

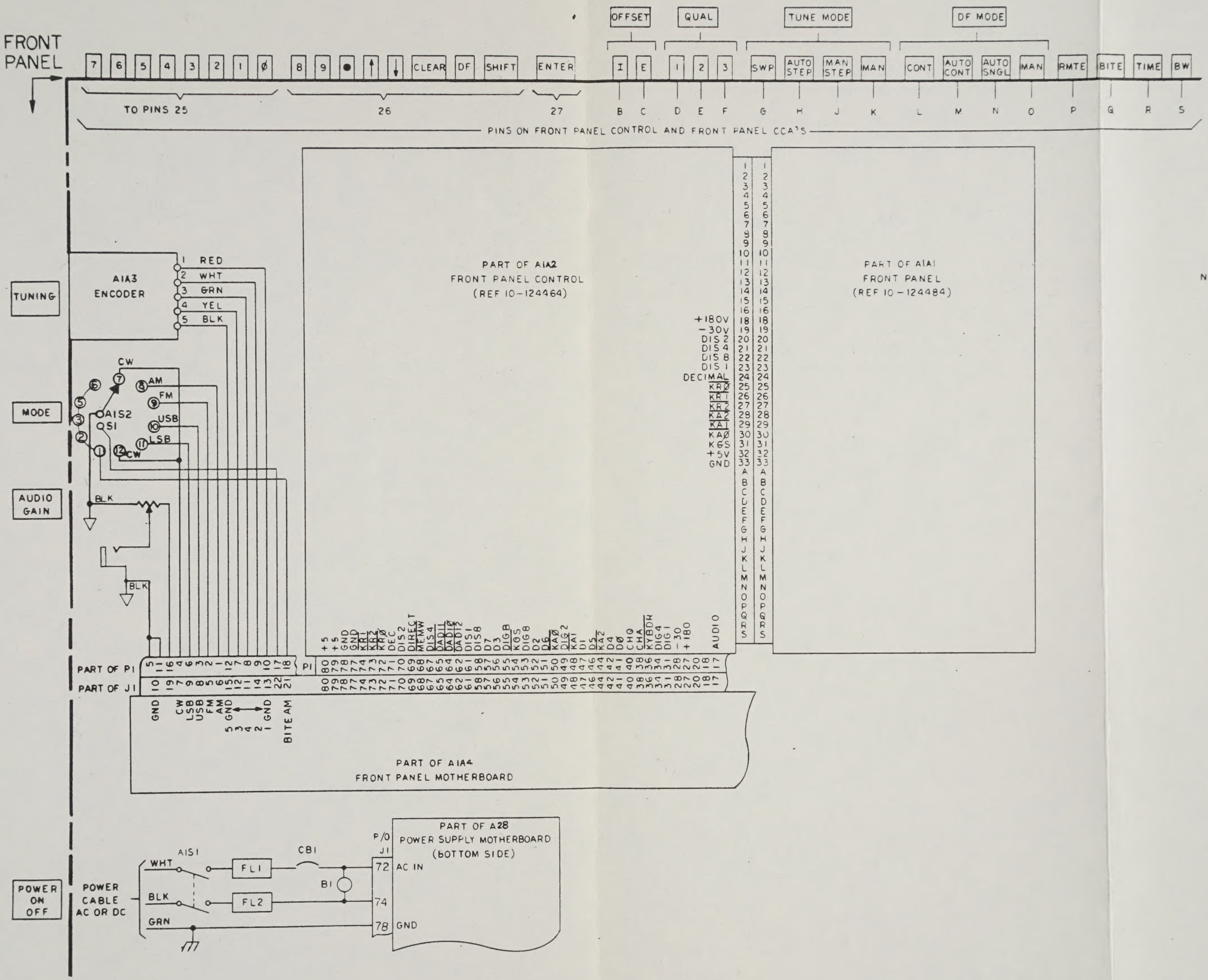
NOTES:
1. REF FIGURE 7-17, SHEET 1 (FRONT PNL CONT)
2. REF FIGURE 7-18, SHEET 1 (FRONT PNL).
3. PARTIAL REF DES ARE SHOWN; FOR COMPLETE DES, PREFIX WITH UNIT NO. AND SUBASSY DES.

GA00383-125(B)
50-136631
REV. A

Figure 7-1. C-5320 Wiring Diagram (Sheet 1 of 4)

Table 6-28. RF Motherboard A27

REFERENCE SYMBOL OR PART NUMBER	NAME OF PARTS AND DESCRIPTION	ALL SYMBOLS AND PART NUMBERS INVOLVED	JAN OR MIL TYPE NUMBER	TOTAL NUMBER PARTS PER END ITEM
	RF MOTHERBOARD: FSC 28815; P/N 10-129184-4.			
C1 thru C4	CAPACITOR, fixed: electrolytic; 22 uF; 50 Vdc; FSC 56289; P/N 501D226F050MM	C1, C2, C3, C4		4
J1 thru J6	CONNECTOR, receptacle: electrical; coax; FSC 16733; P/N 700213.	J1, J2, J3, J4, J5, J6		6
W1	CABLE ASSEMBLY (see table 6-29): FSC 28815; P/N 10-136771-1.	W1		1
W2	CABLE ASSEMBLY (see table 6-29): FSC 28815; P/N 10-136771-2.	W2		1
W3	CABLE ASSEMBLY (see table 6-29): FSC 28815; P/N 10-136771-3.	W3		1
W4	CABLE ASSEMBLY (see table 6-29): FSC 28815; P/N 10-136771-4.	W4		1

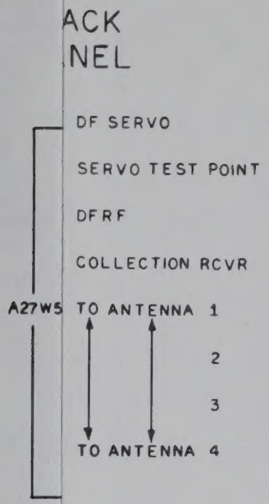

FRONT PANEL
7
6
5
4
3
2
1
Ø
8
9
CLEAR
DF
SHIFT
ENTER
OFFSET
I
E
QUAL
1
2
3
TUNE MODE
SWP
AUTO STEP
MAN STEP
MAN
DF MODE
CONT
AUTO CONT
AUTO SNGL
MAN
RMTE
BITE
TIME
BW
TO PINS 25
26
27
B C D E F G H J K L M N O P Q R S
PINS ON FRONT PANEL CONTROL AND FRONT PANEL CCA'S
PART OF A1A2
FRONT PANEL CONTROL
(REF 10-124464)
PART OF A1A1
FRONT PANEL
(REF 10-124484)
TUNING
A1A3
ENCODER
1 RED
2 WHT
3 GRN
4 YEL
5 BLK
MODE
CW
AM
FM
USB
LSB
CW
A1S2
S1
AUDIO GAIN
BLK
BLK
+180V
-30V
DIS 2
DIS 4
DIS 8
DIS 1
DECIMAL
KA0
K6S
+5V
GND
AUDIO
PART OF P1
PART OF J1
P1
GND
CW
LSB
USB
FM
AM
GND
BITE AM
PART OF A1A4
FRONT PANEL MOTHERBOARD
POWER ON OFF
POWER CABLE AC OR DC
WHT
BLK
GRN
A1S1
FL1
FL2
CB1
B1
P/O J1
72
74
78
AC IN
GND
PART OF A28
POWER SUPPLY MOTHERBOARD
(BOTTOM SIDE)

NOTES:

1. REF FIGURE 7-17, SHEET 1 *(FRONT PNL CONT)*
2. REF FIGURE 7-18, SHEET 1 (FRONT PNL).
3. PARTIAL REF DES ARE SHOWN: FOR COMPLETE DES, PREFIX WITH UNIT NO. AND SUBASSY DES.

GA00383-125(B)
50-136631
REV. A

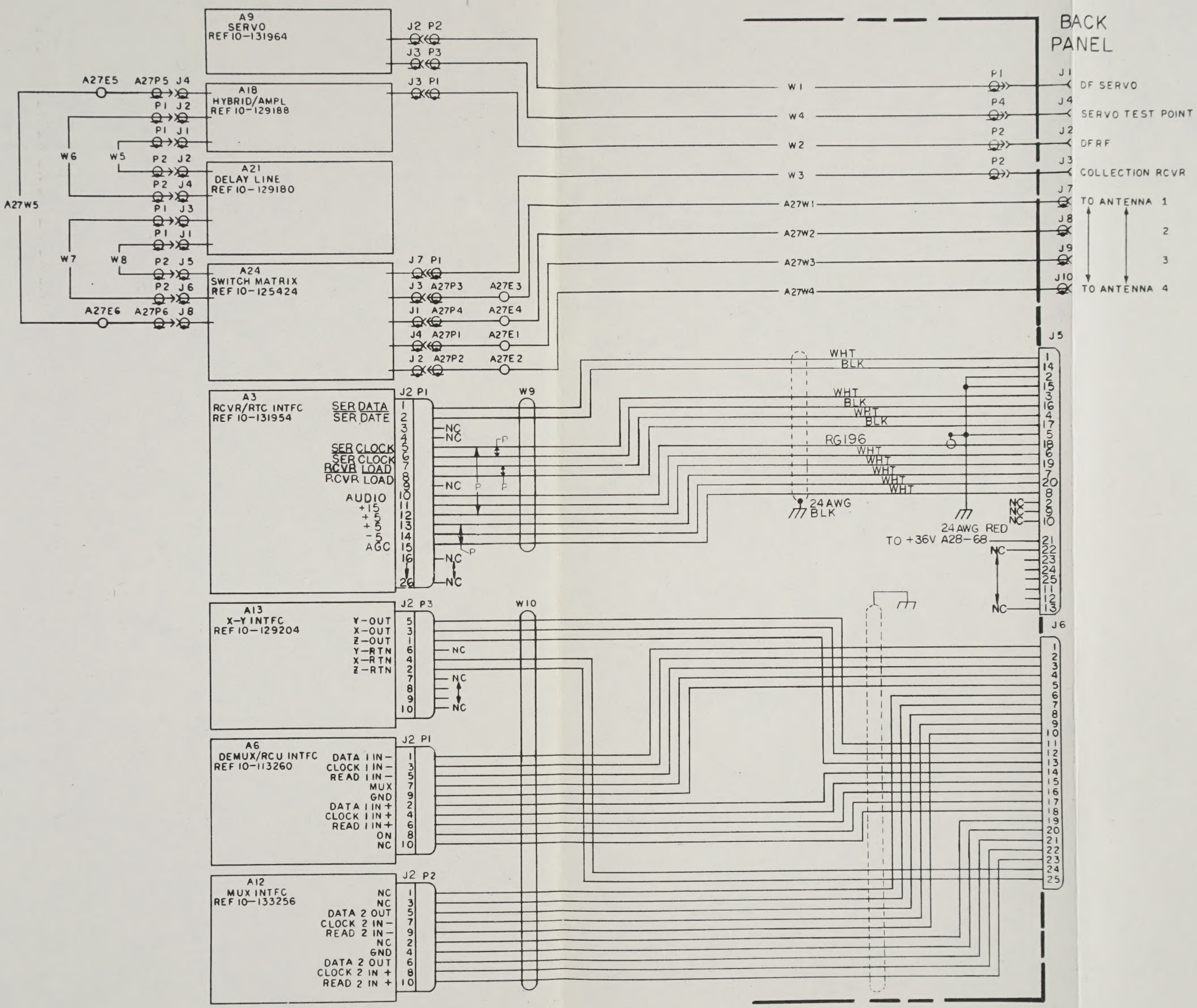
Figure 7-1. C-5320 Wiring Diagram (Sheet 1 of 4)


ACK
NEL
DF SERVO
SERVO TEST POINT
DFRF
COLLECTION RCVR
A27W5
TO ANTENNA 1
2
3
TO ANTENNA 4

CABLE ASSEMBLIES	
CABLE NO.	DWG NO.
W1	10 —136772
W2	—136774—1
W3	—136774—2
W4	—136773
A27W5	—136779
W6	—136776—1
A27W1	—136771—1
A27W2	—136771—2
A27W3	—136771—3
A27W4	—136771—4
W5	—136776—2
W7	—136775—1
W8	—136775—2
W9	—136778
W10	10—136777

REF SCHEMATICS	
CCA	DWG NO.
A3	51—131951
A6	—133257
A9	—131961
A12	—133253
A13	—129201
A18	—129186
A21	—129178
A24	51— 125421

Figure 7-1. C-5320 Wiring Diagram (Sheet 2 of 4)


A9
SERVO
REF 10-131964
J2 P2
J3 P3
A27E5
A27P5 J4
A18
HYBRID/AMPL
REF 10-129188
J3 P1
P1 J2
P1 J1
W6
W5
P2 J2
A21
DELAY LINE
REF 10-129180
P2 J4
A27W5
P1 J3
P1 J1
W7
W8
P2 J5
A24
SWITCH MATRIX
REF 10-125424
P2 J6
A27E6
A27P6 J8
J7 P1
J3 A27P3
A27E3
J1 A27P4
A27E4
J4 A27P1
A27E1
J2 A27P2
A27E2
BACK
PANEL
W1
W4
W2
W3
A27W1
A27W2
A27W3
A27W4
P1
P4
P2
P2
J1
J4
J2
J3
J7
J8
J9
J10
DF SERVO
SERVO TEST POINT
DF RF
COLLECTION RCVR
TO ANTENNA 1
2
3
TO ANTENNA 4
J5
A3
RCVR/RTC INTFC
REF 10-131954
J2 P1
W9
SER DATA
SER DATE
SER CLOCK
SER CLOCK
RCVR LOAD
RCVR LOAD
AUDIO
+15
+5
+5
-5
-5
AGC
NC
P
WHT
BLK
WHT
BLK
WHT
BLK
RG196
WHT
WHT
WHT
WHT
WHT
24 AWG
BLK
24 AWG RED
TO +36V A28-68
A13
X-Y INTFC
REF 10-129204
J2 P3
W10
Y-OUT
X-OUT
Z-OUT
Y-RTN
X-RTN
Z-RTN
J6
A6
DEMUX/RCU INTFC
REF 10-113260
J2 P1
DATA 1 IN-
CLOCK 1 IN-
READ 1 IN-
MUX
GND
DATA 1 IN+
CLOCK 1 IN+
READ 1 IN+
ON
NC
A12
MUX INTFC
REF 10-133256
J2 P2
NC
NC
DATA 2 OUT
CLOCK 2 IN-
READ 2 IN-
NC
GND
DATA 2 OUT
CLOCK 2 IN+
READ 2 IN+

CABLE ASSEMBLIES	
CABLE NO.	DWG NO.
W1	10-136772
W2	-136774-1
W3	-136774-2
W4	-136773
A27W5	-136779
W6	-136776-1
A27W1	-136771-1
A27W2	-136771-2
A27W3	-136771-3
A27W4	-136771-4
W5	-136776-2
W7	-136775-1
W8	-136775-2
W9	-136778
W10	10-136777

REF SCHEMATICS	
CCA	DWG NO.
A3	51-131951
A6	-133257
A9	-131961
A12	-133253
A13	-129201
A18	-129186
A21	-129178
A24	51-125421

Figure 7-1. C-5320 Wiring Diagram (Sheet 2 of 4)

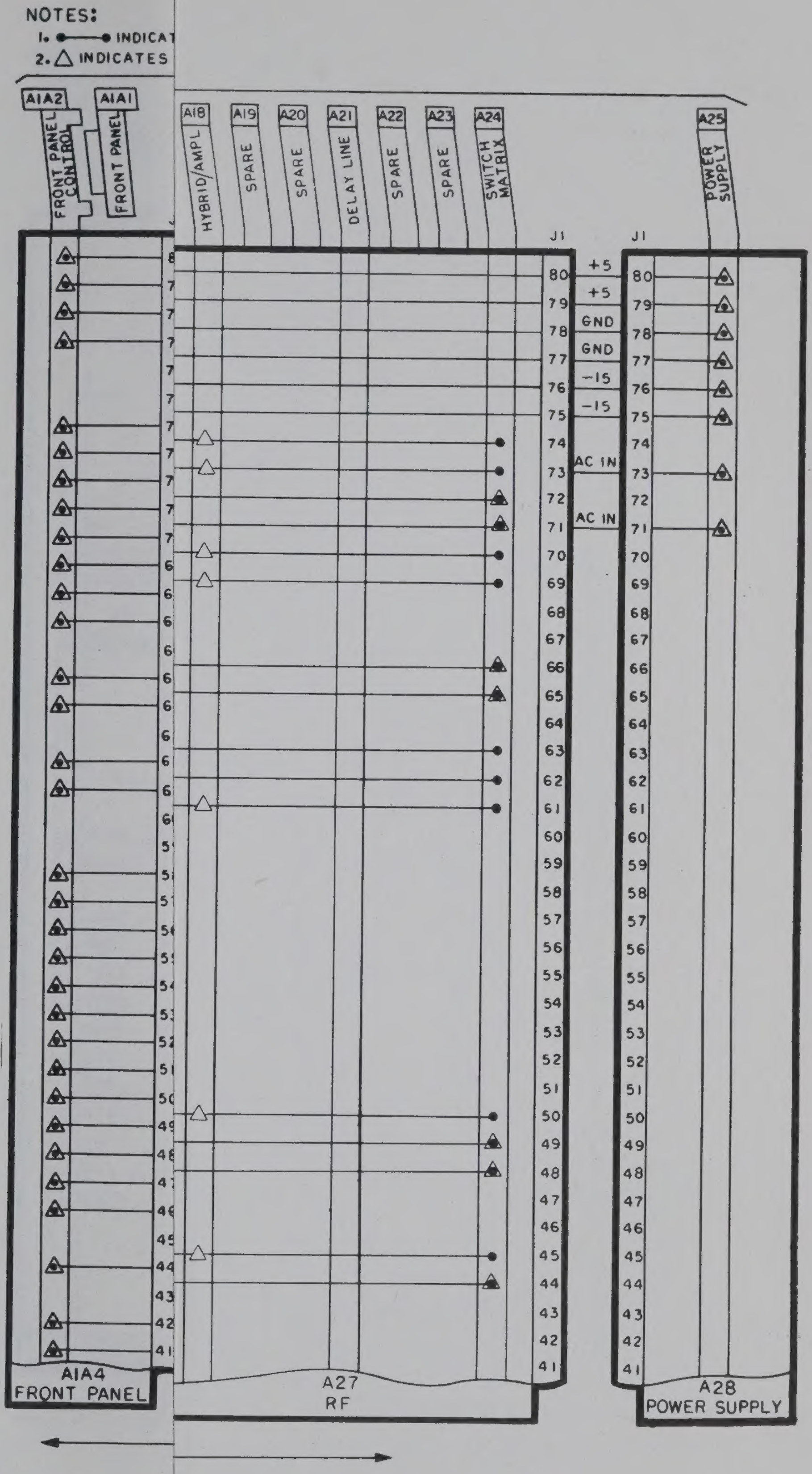

NOTES:
1. ●—● INDICAT
2. △ INDICATES
A1A2
FRONT PANEL CONTROL
A1A1
FRONT PANEL
A18
HYBRID/AMPL
A19
SPARE
A20
SPARE
A21
DELAY LINE
A22
SPARE
A23
SPARE
A24
SWITCH MATRIX
A25
POWER SUPPLY
J1
J1
+5
+5
GND
GND
−15
−15
AC IN
AC IN
80
79
78
77
76
75
74
73
72
71
70
69
68
67
66
65
64
63
62
61
60
59
58
57
56
55
54
53
52
51
50
49
48
47
46
45
44
43
42
41
A1A4
FRONT PANEL
A27
RF
A28
POWER SUPPLY

Figure 7-1. C-5320 Wiring Diagram (Sheet 3 of 4)

NOTES:
1. ●——● INDICATES START AND TERMINATION OF SIGNAL.
2. △ INDICATES SIGNAL IS USED ON PRINTED CIRCUIT BOARD.

③ JUMPER
④ JUMPER

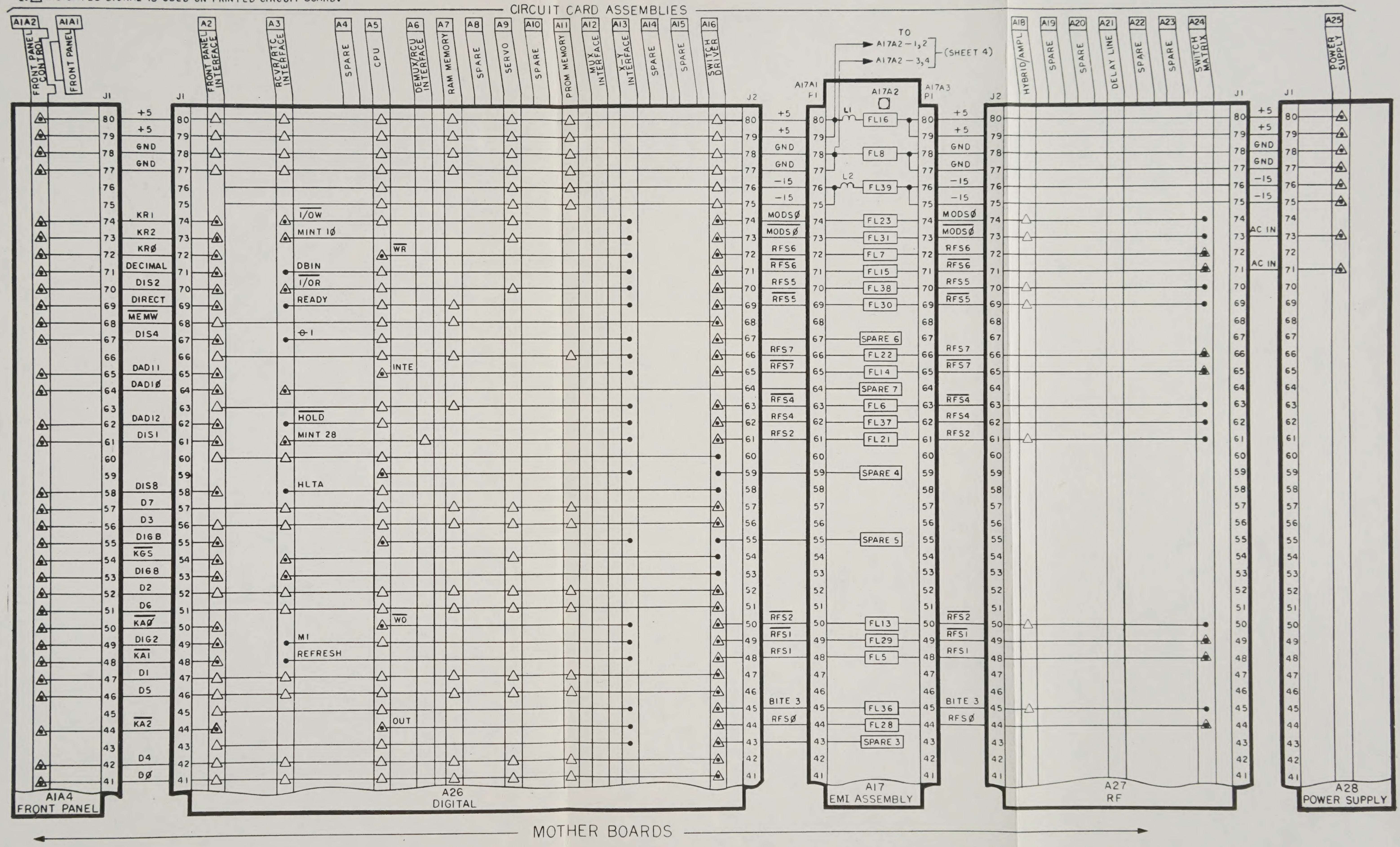

CIRCUIT CARD ASSEMBLIES
A1A2 FRONT PANEL CONTROL
A1A1 FRONT PANEL
A2 FRONT PANEL INTERFACE
A3 RCVR/RTC INTERFACE
A4 SPARE
A5 CPU
A6 DEMUX/RCU INTERFACE
A7 RAM MEMORY
A8 SPARE
A9 SERVO
A10 SPARE
A11 PROM MEMORY
A12 MUX INTERFACE
A13 X-Y INTERFACE
A14 SPARE
A15 SPARE
A16 SWITCH DRIVER
TO A17A2 — 1,2
A17A2 — 3,4
(SHEET 4)
A17A1 F1
A17A2
A17A3 P1
L1
L2
A18 HYBRID/AMPL
A19 SPARE
A20 SPARE
A21 DELAY LINE
A22 SPARE
A23 SPARE
A24 SWITCH MATRIX
A25 POWER SUPPLY
J1
J2
+5
+5
GND
GND
KR1
KR2
KR0
DECIMAL
DIS2
DIRECT
MEMW
DIS4
DAD11
DAD10
DAD12
DIS1
DIS8
D7
D3
DIG8
KGS
DIG8
D2
D6
KA0
DIG2
KA1
D1
D5
KA2
D4
D0
I/OW
MINT 10
WR
DBIN
I/OR
READY
φ1
INTE
HOLD
MINT 28
HLTA
WO
M1
REFRESH
OUT
-15
-15
MODS0
MODS0
RFS6
RFS6
RFS5
RFS5
RFS7
RFS7
RFS4
RFS4
RFS2
RFS2
RFS1
RFS1
BITE 3
RFS0
FL16
FL8
FL39
FL23
FL31
FL7
FL15
FL38
FL30
SPARE 6
FL22
FL14
SPARE 7
FL6
FL37
FL21
SPARE 4
SPARE 5
FL13
FL29
FL5
FL36
FL28
SPARE 3
AC IN
AC IN
A1A4 FRONT PANEL
A26 DIGITAL
A17 EMI ASSEMBLY
A27 RF
A28 POWER SUPPLY
MOTHER BOARDS

Figure 7-1. C-5320 Wiring Diagram (Sheet 3 of 4)

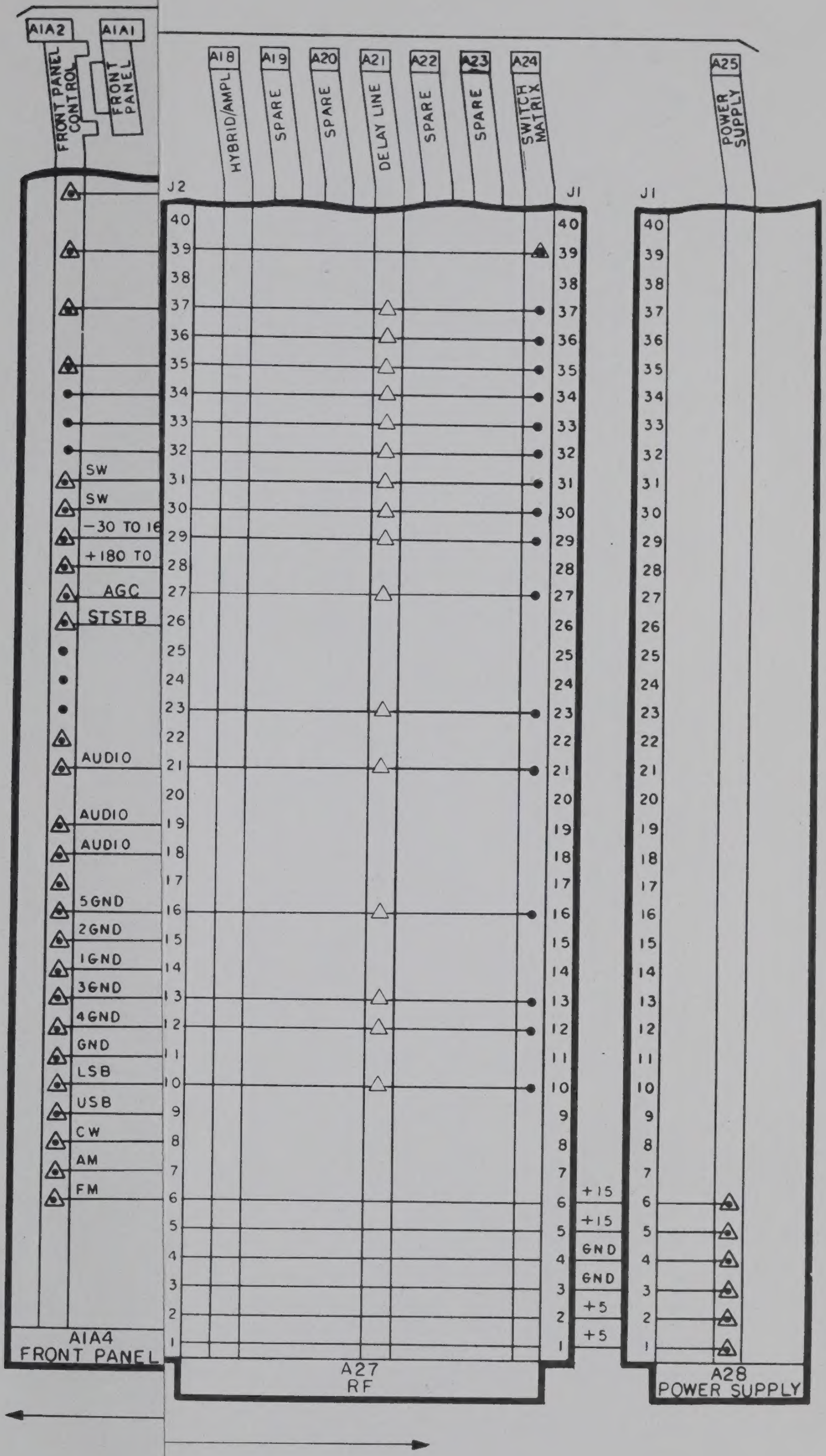

A1A2
FRONT PANEL CONTROL
A1A1
FRONT PANEL
A18
HYBRID/AMPL
A19
SPARE
A20
SPARE
A21
DELAY LINE
A22
SPARE
A23
SPARE
A24
SWITCH MATRIX
A25
POWER SUPPLY
J2
J1
J1
SW
SW
-30 TO 16
+180 TO
AGC
STSTB
AUDIO
AUDIO
AUDIO
5GND
2GND
1GND
3GND
4GND
GND
LSB
USB
CW
AM
FM
+15
+15
GND
GND
+5
+5
A1A4
FRONT PANEL
A27
RF
A28
POWER SUPPLY

Figure 7-1. C-5320 Wiring Diagram (Sheet 4 of 4)

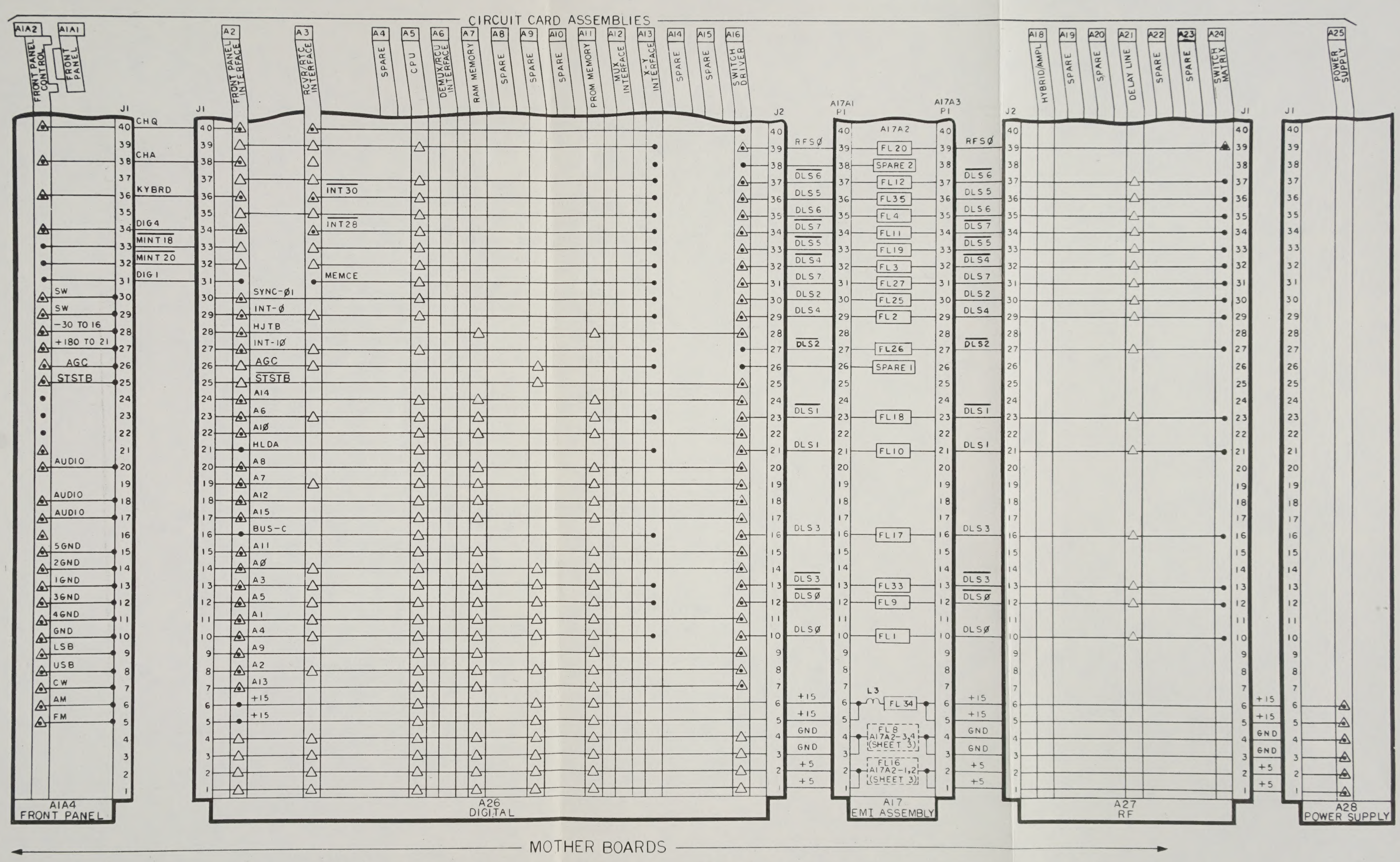

CIRCUIT CARD ASSEMBLIES
A1A2 FRONT PANEL CONTROL
A1A1 FRONT PANEL
A2 FRONT PANEL INTERFACE
A3 RCVR/RTC INTERFACE
A4 SPARE
A5 CPU
A6 DEMUX/RCU INTERFACE
A7 RAM MEMORY
A8 SPARE
A9 SPARE
A10 SPARE
A11 PROM MEMORY
A12 MUX INTERFACE
A13 X-Y INTERFACE
A14 SPARE
A15 SPARE
A16 SWITCH DRIVER
A18 HYBRID/AMPL
A19 SPARE
A20 SPARE
A21 DELAY LINE
A22 SPARE
A23 SPARE
A24 SWITCH MATRIX
A25 POWER SUPPLY
J1
J2
A17A1 P1
A17A3 P1
A17A2
CHQ
CHA
KYBRD
DIG4
MINT18
MINT20
DIG1
SW
SW
-30 TO 16
+180 TO 21
AGC
STSTB
AUDIO
AUDIO
AUDIO
5GND
2GND
1GND
3GND
4GND
GND
LSB
USB
CW
AM
FM
INT30
INT28
MEMCE
SYNC-Ø1
INT-Ø
HJTB
INT-1Ø
AGC
STSTB
A14
A6
A1Ø
HLDA
A8
A7
A12
A15
BUS-C
A11
AØ
A3
A5
A1
A4
A9
A2
A13
+15
+15
RFSØ
DLS6
DLS5
DLS6
DLS7
DLS5
DLS4
DLS7
DLS2
DLS4
DLS2
DLS1
DLS1
DLS3
DLS3
DLSØ
DLSØ
+15
+15
GND
GND
+5
+5
FL20
SPARE 2
FL12
FL35
FL4
FL11
FL19
FL3
FL27
FL25
FL2
FL26
SPARE 1
FL18
FL10
FL17
FL33
FL9
FL1
L3
FL34
FL8 A17A2-3,4 (SHEET 3)
FL16 A17A2-1,2 (SHEET 3)
RFSØ
DLS6
DLS5
DLS6
DLS7
DLS5
DLS4
DLS7
DLS2
DLS4
DLS2
DLS1
DLS1
DLS3
DLS3
DLSØ
DLSØ
+15
+15
GND
GND
+5
+5
+15
+15
GND
GND
+5
+5
A1A4 FRONT PANEL
A26 DIGITAL
A17 EMI ASSEMBLY
A27 RF
A28 POWER SUPPLY
MOTHER BOARDS

Figure 7-1. C-5320 Wiring Diagram (Sheet 4 of 4)

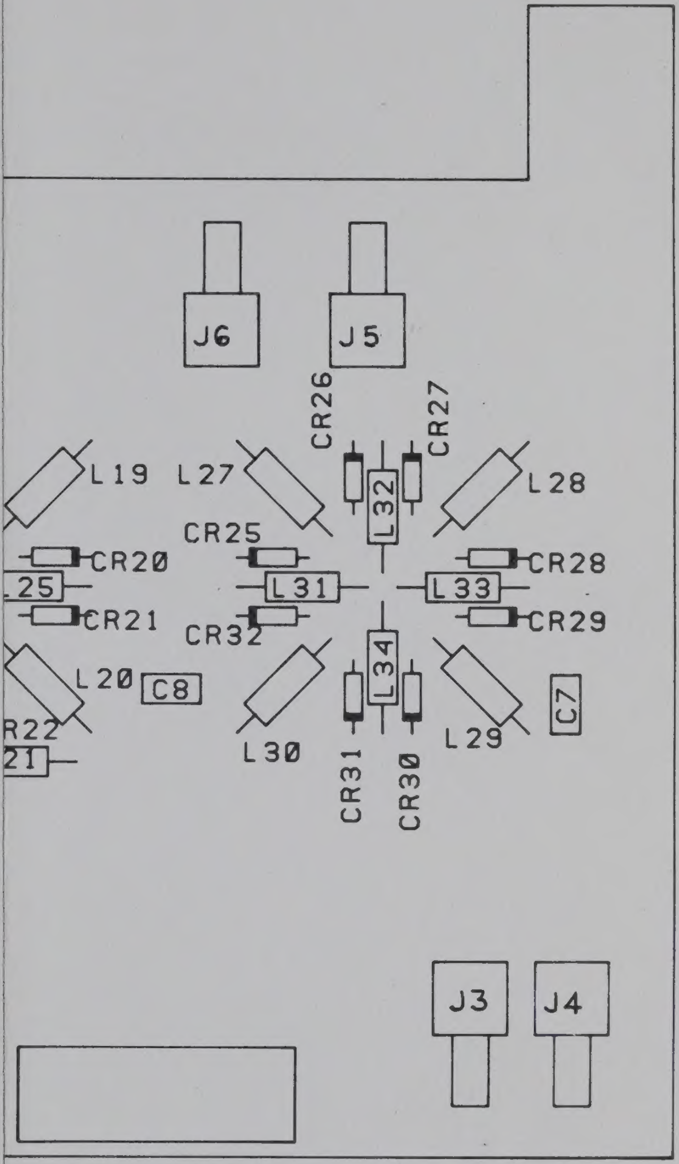

J6
J5
CR26
CR27
L19
L27
L32
L28
CR25
CR20
CR28
25
L31
L33
CR21
CR29
CR32
L34
L20
C8
C7
R22
21
L30
L29
CR31
CR30
J3
J4

Figure 7-3. RF Switch CCA A24
Schematic Diagram
(Sheet 2 of 2)

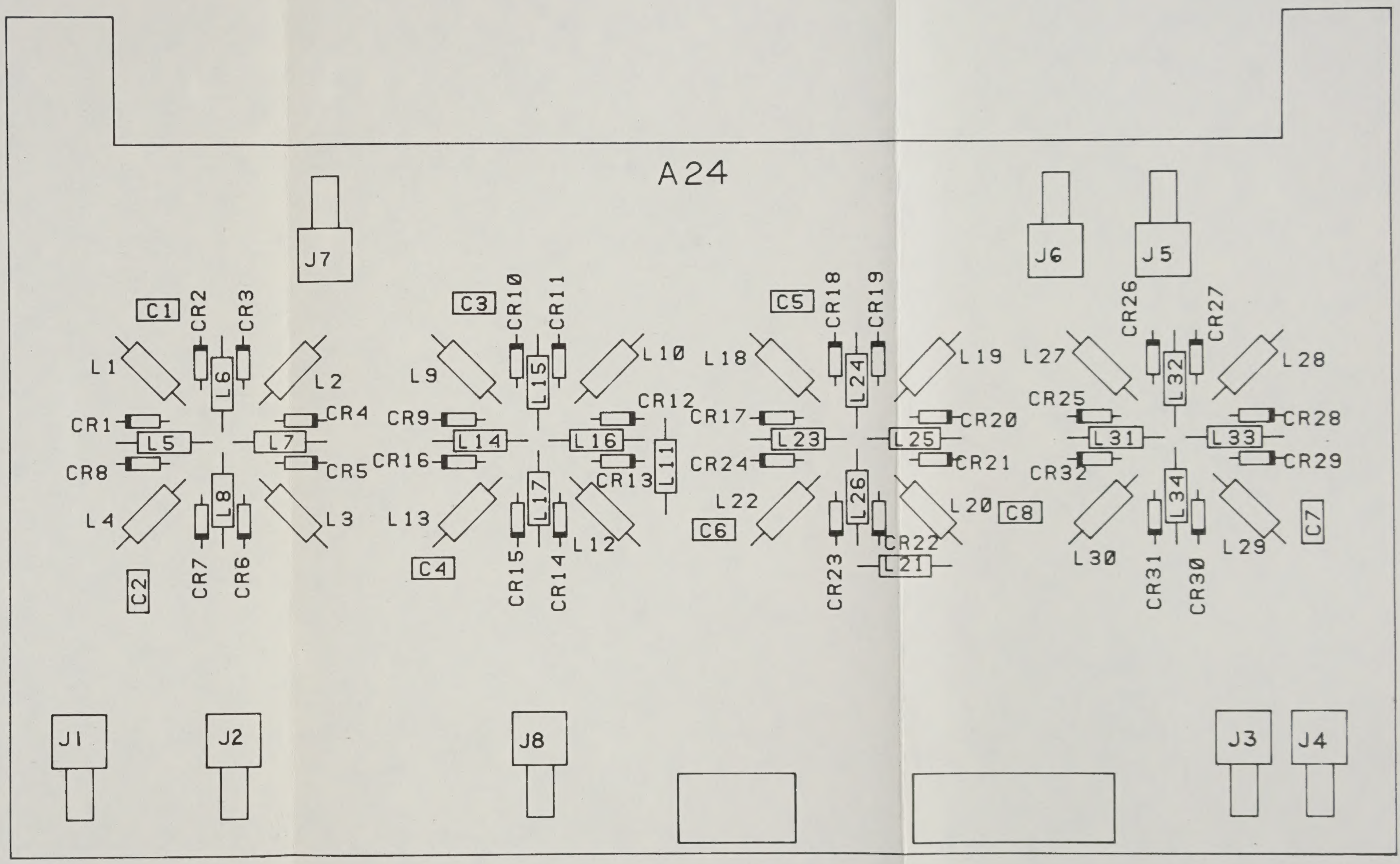
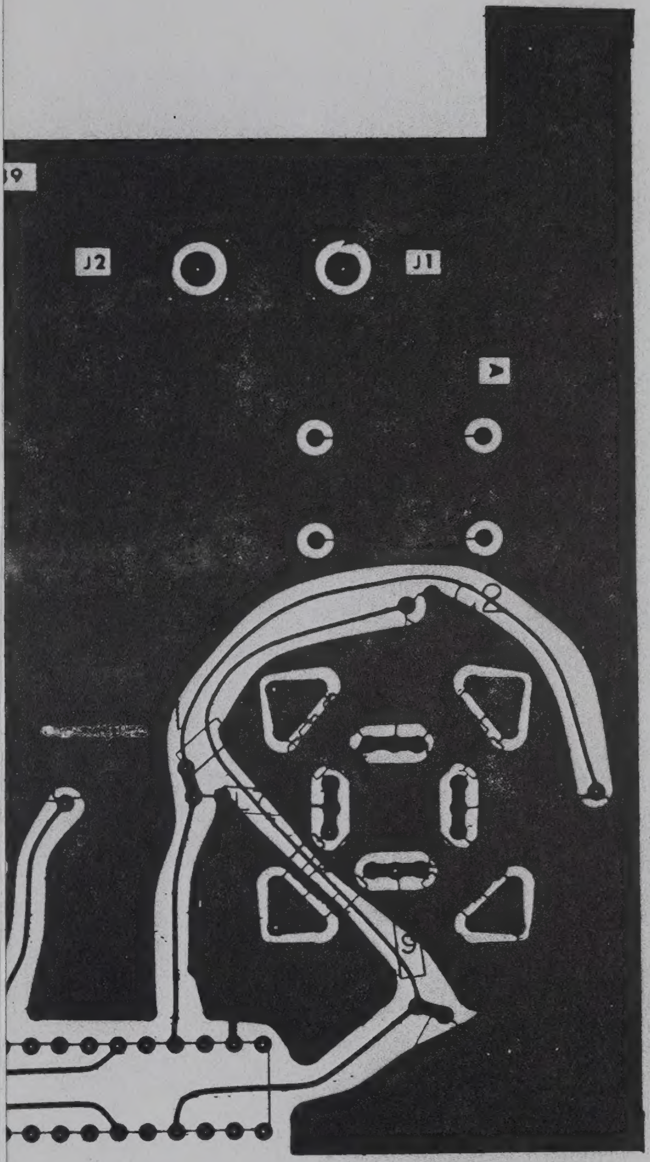
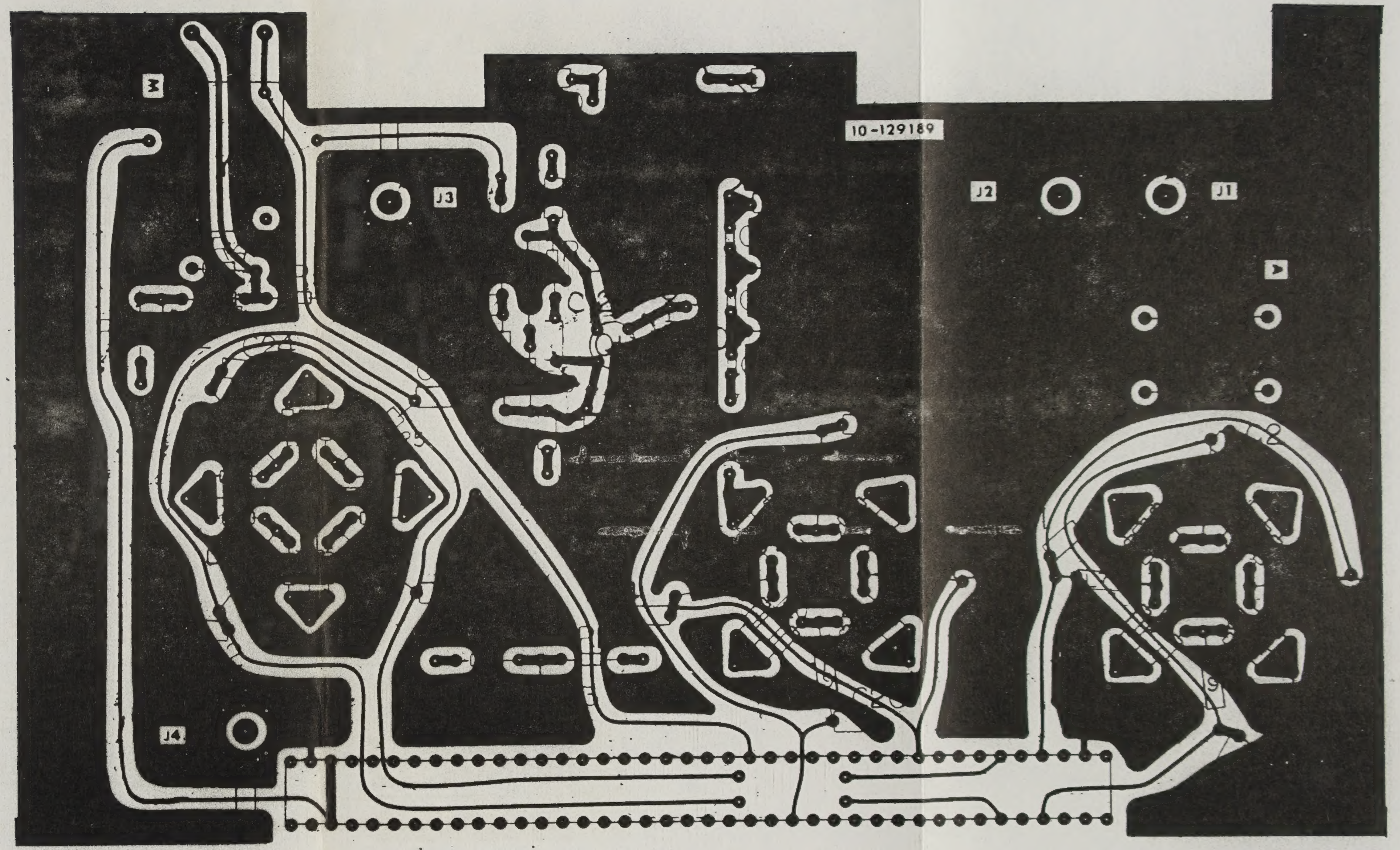

A24
J7
J6
J5
C1
CR2
CR3
C3
CR10
CR11
C5
CR18
CR19
CR26
CR27
L1
L6
L2
L9
L15
L10
L18
L24
L19
L27
L32
L28
CR12
CR1
CR4
CR9
CR17
CR20
CR25
CR28
L5
L7
L14
L16
L11
L23
L25
L31
L33
CR8
CR5
CR16
CR13
CR24
CR21
CR32
CR29
L4
L8
L3
L13
L17
L12
L22
L26
L20
C8
L34
C7
L29
C6
CR22
L21
L30
C2
CR7
CR6
C4
CR15
CR14
CR23
CR31
CR30
J1
J2
J8
J3
J4

Figure 7-3. RF Switch CCA A24 Schematic Diagram (Sheet 2 of 2)



GA00383-118(B)
10-129189
REV. E

Figure 7-5. Hybrid Amplifier CCA A18 Schematic Diagram (Sheet 2 of 2)


3
10-129189
J3
J2
J1
J4

GA00383-118(B)
10-129189
REV. E

Figure 7-5. Hybrid Amplifier CCA A18 Schematic Diagram (Sheet 2 of 2)

HIGHEST REFERENCE DESIGNATIONS								
U23	CR1	C20	R7	J2				
REFERENCE DESIGNATIONS NOT USED								

MICROCIRCUIT IDENT					
REF DES	TYPE	VCC	GND	+12V	-3V
U1	K1100A	14	7		
U2	[illegible]			6	
U3	LM395N	5	4		
U4, 17, 22	750-4RK	1			
U5	SN7493N	14	7		
U6, 8, 9, 12, 13	C8212	24	12		
U7	C8080B	20	2	28	11
U10	SN7400N	14	7		
U11	P3404	16	8		
U14	SN7404N	14	7		
U15	LM340T12		3	2	
U16	93L18DM	16	8		
U18, 19	D8216	16	8		
U20	SN7438N	14	7		
U21	SN7412N	14	7		
U23	[illegible]		1		2

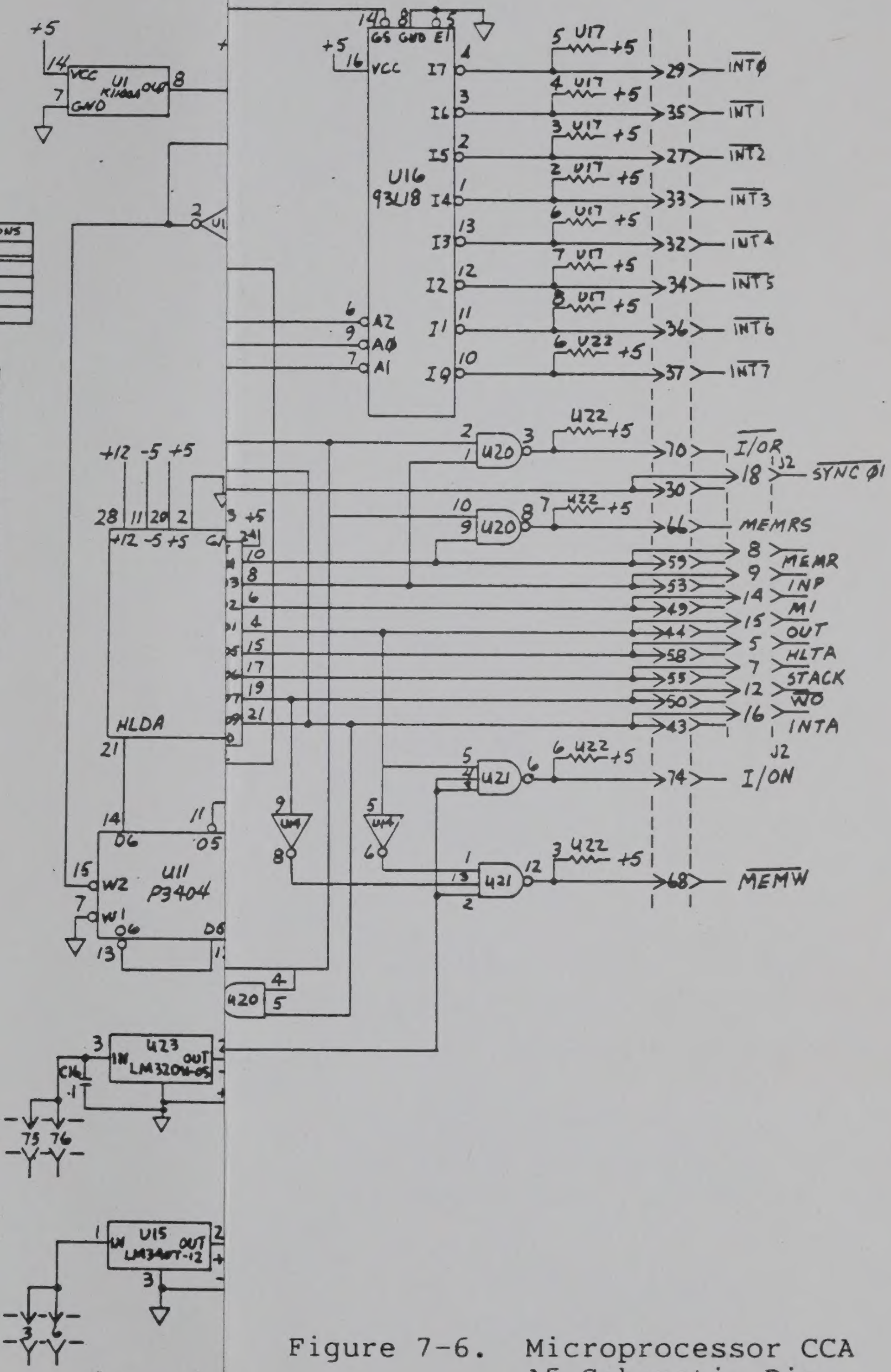
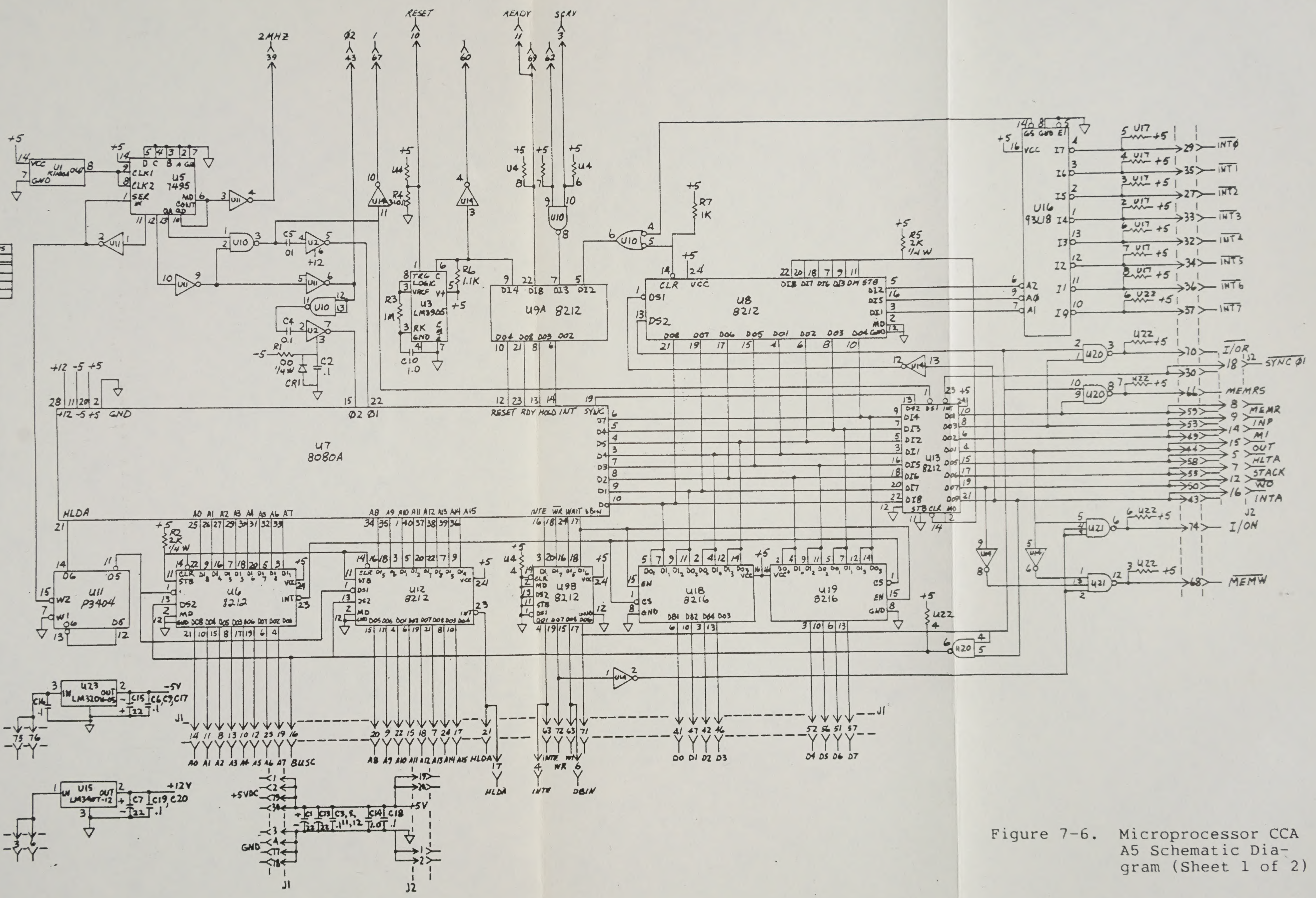

+5
U1 K1100A
VCC GND OUT
U16 93L18
GS GND EI
VCC I7 I6 I5 I4 I3 I2 I1 I0
A2 A0 A1
U17
U22
+5
INTØ
INT1
INT2
INT3
INT4
INT5
INT6
INT7
U20
I/OR
J2
SYNC Ø1
MEMRS
MEMR
INP
M1
OUT
HLTA
STACK
WO
INTA
J2
U21
I/ON
MEMW
+12 -5 +5
HLDA
U14
U11 P3404
W2 W1 D6 O6 O5
U20
U23 LM320H-05
IN OUT
C14 .1
75 76
U15 LM340T-12
IN OUT
3 6

Figure 7-6. Microprocessor CCA A5 Schematic Diagram (Sheet 1 of 2)

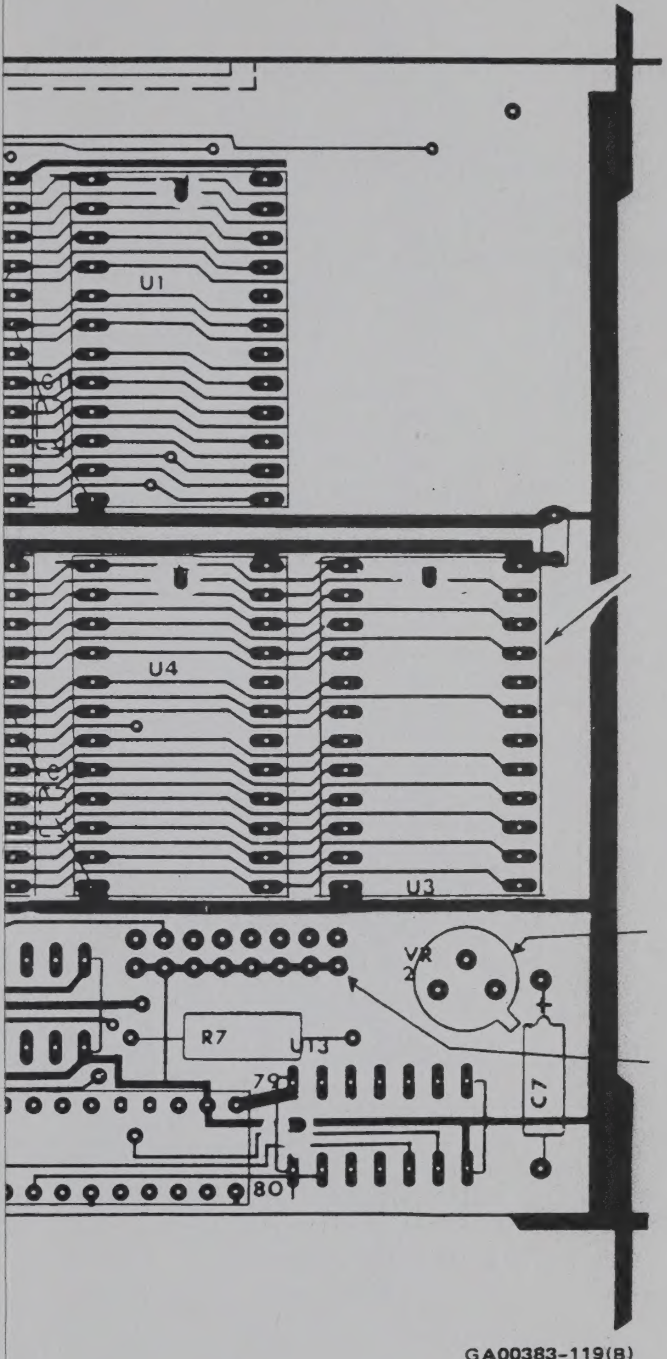
HIGHEST REFERENCE DESIGNATIONS								
U23	CR1	C20	R7	J2				
REFERENCE DESIGNATIONS NOT USED								

MICROCIRCUIT IDENT					
REF DES	TYPE	VCC	GND	+12V	-3V
U1	K1100A	14	7		
U2	[illegible]			6	
U3	LM3905N	5	4		
U4, 17, 22	750-[illegible]	1			
U5	SN7495N	14	7		
U6, 8, 9, 12, 13	C8212	24	12		
U7	C8080A	20	2	28	11
U10	SN7400N	14	7		
U11	P3404	16	8		
U14	SN7404N	14	7		
U15	LM340T12		3	2	
U16	93L18DM	16	8		
U18, 19	D8216	16	8		
U20	SN7438N	14	7		
U21	SN74128N	14	7		
U23	LM320H-05		1		2



2MHZ
Ø2
1
RESET
READY
SCRV
U1 K1100A
U5 7495
U3 LM3905
U9A 8212
U8 8212
U16 93L18
U7 8080A
U13 8212
U11 P3404
U6 8212
U12 8212
U9B 8212
U18 8216
U19 8216
U23 LM320H-05
U15 LM340T-12
INTØ
INT1
INT2
INT3
INT4
INT5
INT6
INT7
I/OR
SYNC Ø1
MEMRS
MEMR
INP
M1
OUT
HLTA
STACK
WO
INTA
I/ON
MEMW
HLDA
A0 A1 A2 A3 A4 A5 A6 A7 BUSC
A8 A9 A10 A11 A12 A13 A14 A15 HLDA
INTE WR
DBIN
D0 D1 D2 D3
D4 D5 D6 D7
-5V
+12V
+5VDC
+5V
GND
J1
J2

Figure 7-6. Microprocessor CCA A5 Schematic Diagram (Sheet 1 of 2)


U1
U4
U3
VR
2
R7
U13
79
80
C7

GA00383-119(B)
10-129748
REV. F

Figure 7-7. PROM Memory CCA All Schematic Diagram (Sheet 3 of 3)

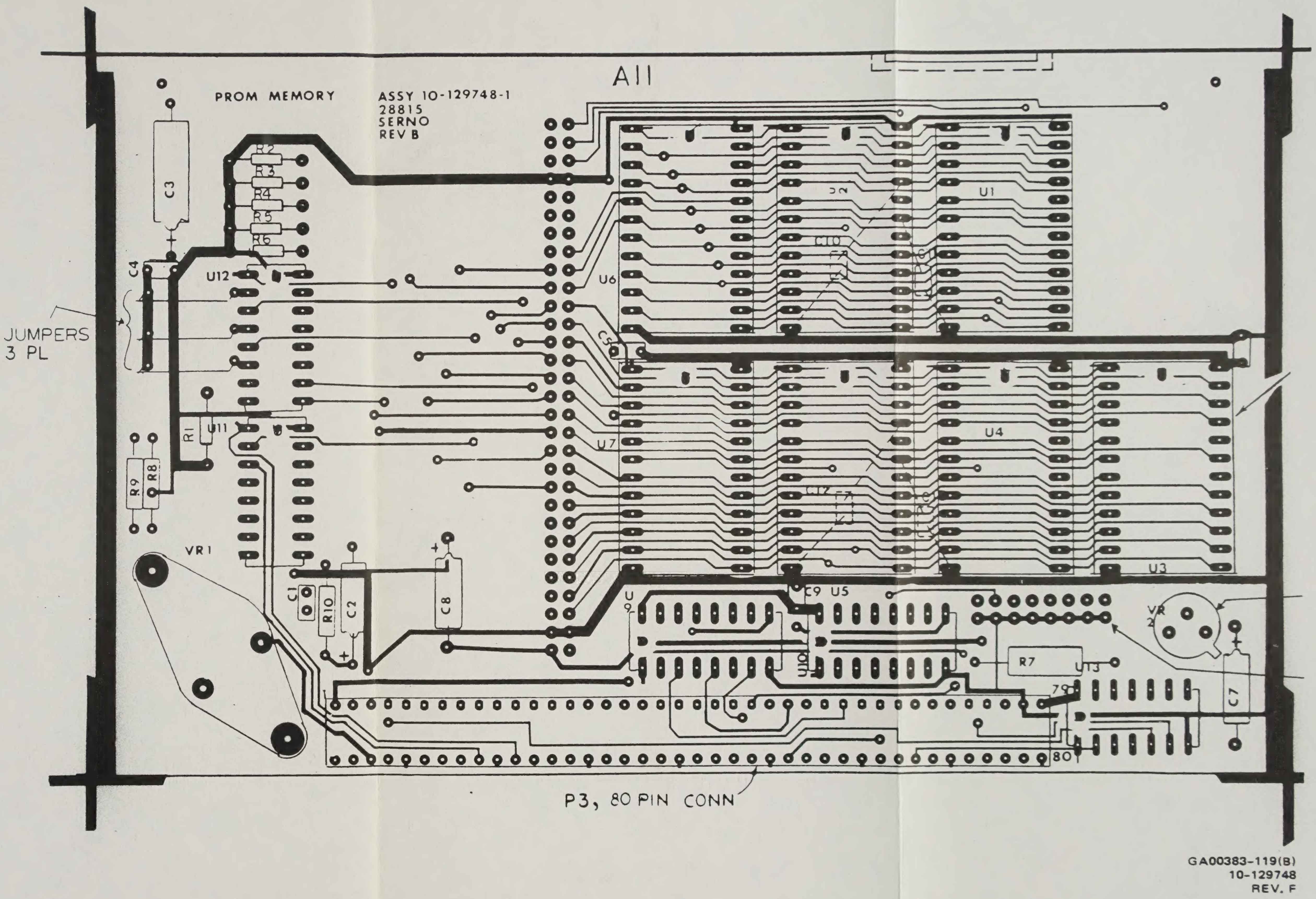
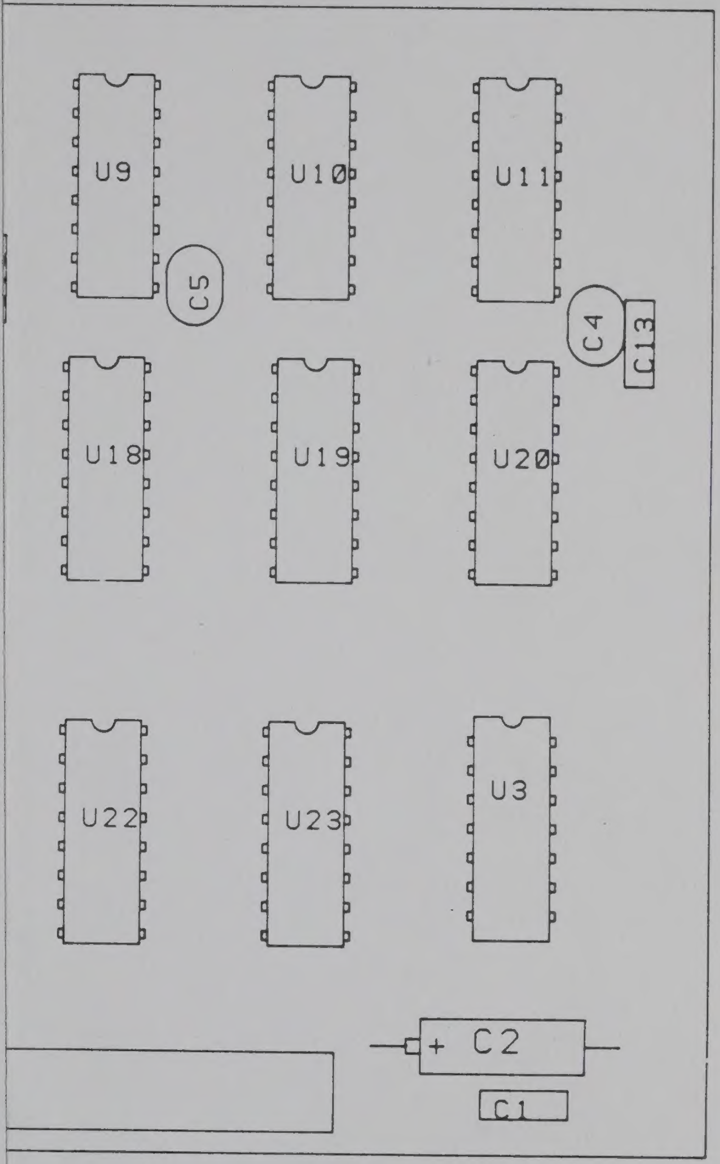
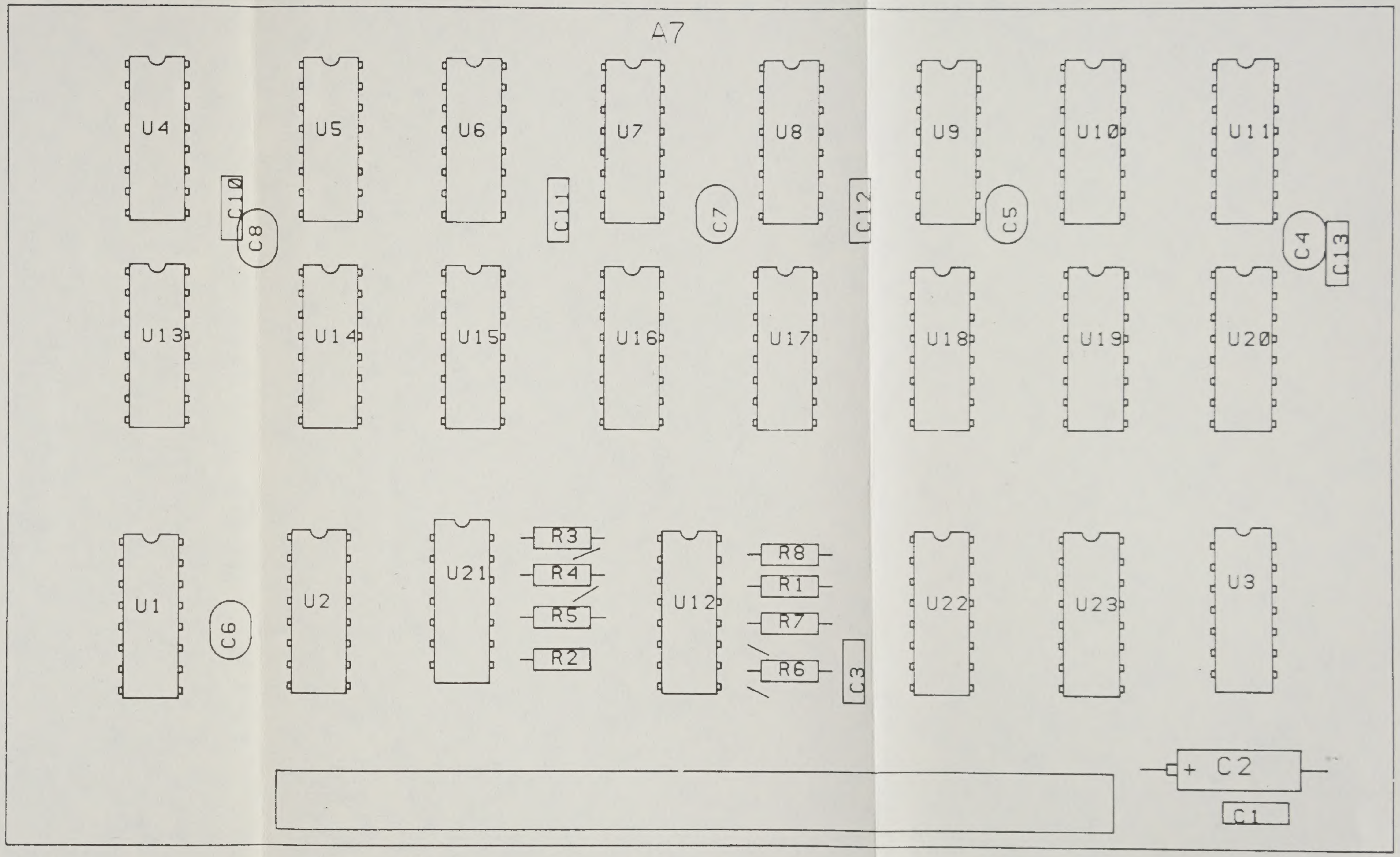

PROM MEMORY
ASSY 10-129748-1
28815
SERNO
REV B
A11
R2
R3
R4
R5
R6
C3
C4
U12
JUMPERS
3 PL
R1
U11
R9
R8
VR1
C1
R10
C2
C8
U6
U7
C5
U2
U1
C10
U4
C12
U3
U9
C9
U5
U10
R7
U13
VR2
C7
79
80
P3, 80 PIN CONN
GA00383-119(B)
10-129748
REV. F

Figure 7-7. PROM Memory CCA A11 Schematic Diagram (Sheet 3 of 3)


U9
U10
U11
C5
C4
C13
U18
U19
U20
U22
U23
U3
+
C2
C1

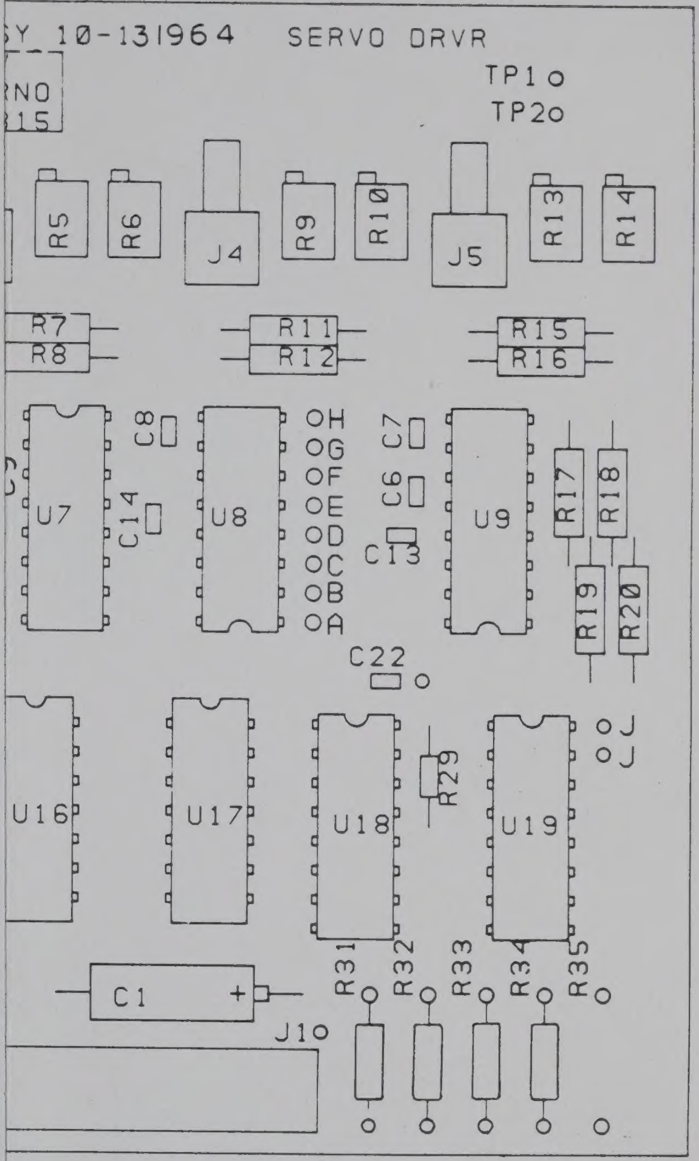
GA00383-120(B)
10-129758
REV. C

Figure 7-8. RAM Memory CCA A7 Schematic Diagram (Sheet 3 of 3)


A7
U4
U5
U6
U7
U8
U9
U10
U11
C10
C8
C11
C7
C12
C5
C4
C13
U13
U14
U15
U16
U17
U18
U19
U20
U1
C6
U2
U21
R3
R4
R5
R2
U12
R8
R1
R7
R6
C3
U22
U23
U3
+ C2
C1

GA00383-120(B)
10-129758
REV. C

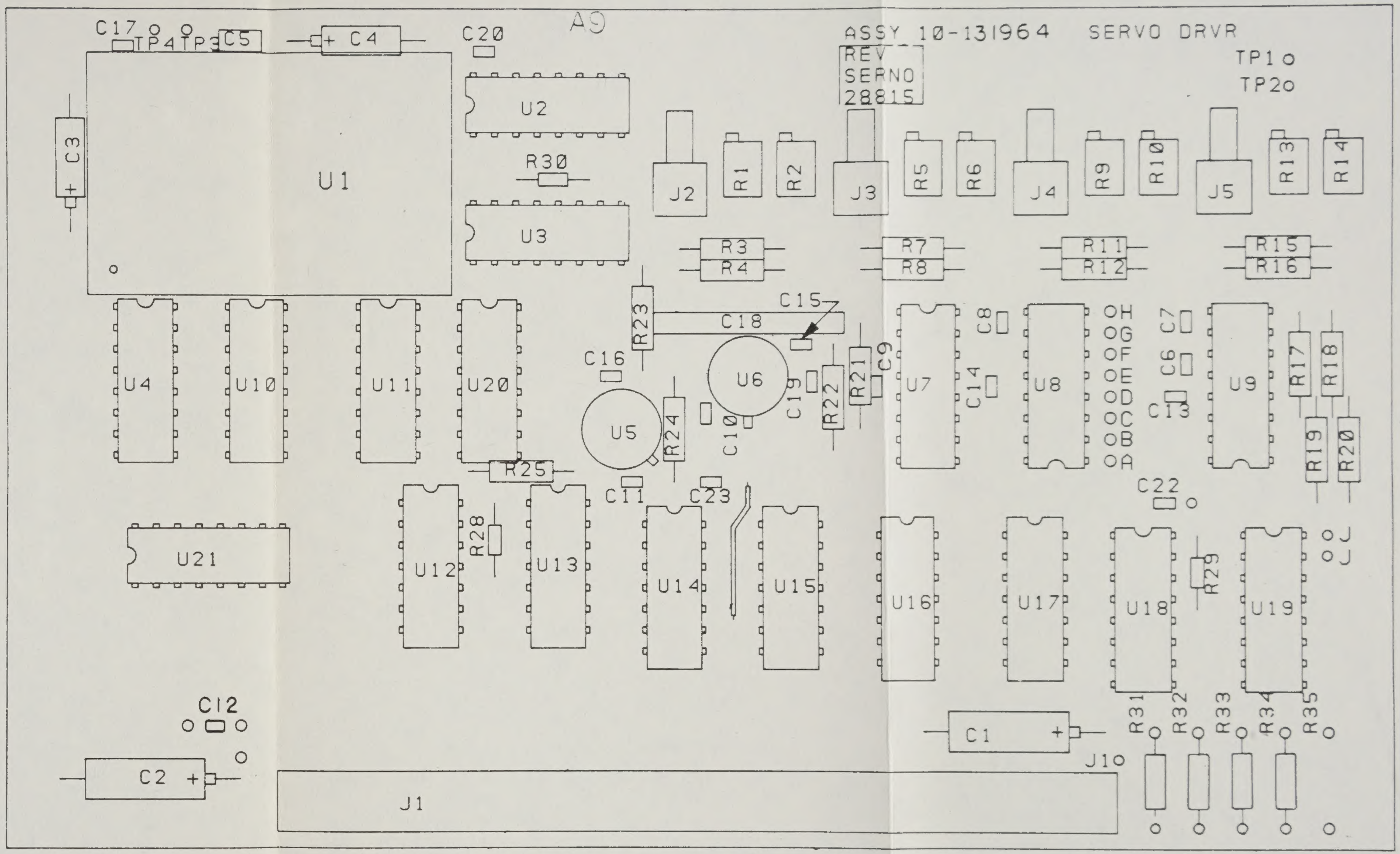
Figure 7-8. RAM Memory CCA A7 Schematic Diagram (Sheet 3 of 3)



Y 10-131964 SERVO DRVR
NO
15
TP1
TP2
R5
R6
J4
R9
R10
J5
R13
R14
R7
R8
R11
R12
R15
R16
C8
C7
C6
C14
C13
C9
U7
U8
U9
H
G
F
E
D
C
B
A
R17
R18
R19
R20
C22
J
J
U16
U17
U18
U19
R29
R31
R32
R33
R34
R35
C1
+
J1

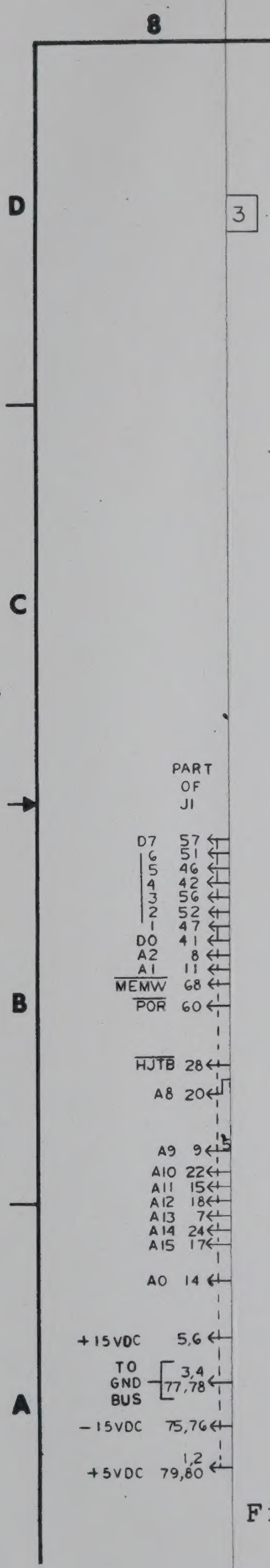
GA00383-121(B)
10-131964
REV. B

Figure 7-11. Servo CCA A9 Schematic Diagram (Sheet 2 of 2)


A9
ASSY 10-131964 SERVO DRVR
REV
SERNO
28815
TP1
TP2
TP3
TP4
C17
C5
C4
C20
C3
U1
U2
R30
U3
J2
R1
R2
J3
R5
R6
J4
R9
R10
J5
R13
R14
R3
R4
R7
R8
R11
R12
R15
R16
R23
C15
C18
C16
U6
C19
R22
R21
C9
U7
C8
C14
U8
H
G
F
E
D
C
B
A
C7
C6
C13
U9
R17
R18
R19
R20
U4
U10
U11
U20
U5
R24
C10
R25
C11
C23
C22
U21
U12
R28
U13
U14
U15
U16
U17
U18
R29
U19
J
J
C12
C1
R31
R32
R33
R34
R35
J10
C2
J1

GA00383-121(B)
10-131964
REV. B

Figure 7-11. Servo CCA A9 Schematic Diagram (Sheet 2 of 2)


8
2
1
D
C
B
A
3
PART OF J1
D7 57
6 51
5 46
4 42
3 56
2 52
1 47
D0 41
A2 8
A1 11
$\overline{\text{MEMW}}$ 68
$\overline{\text{POR}}$ 60
$\overline{\text{HJTB}}$ 28
A8 20
5
A9 9
A10 22
A11 15
A12 18
A13 7
A14 24
A15 17
A0 14
+15VDC 5,6
TO GND BUS 3,4 77,78
−15VDC 75,76
+5VDC 1,2 79,80

HIGHEST REFERENCE DESIGNATIONS						
C27	CR10	J2	Q2	R55	TP4	U13
REFERENCE DESIGNATIONS NOT USED						
				R25, 34,		
				R51, R54		

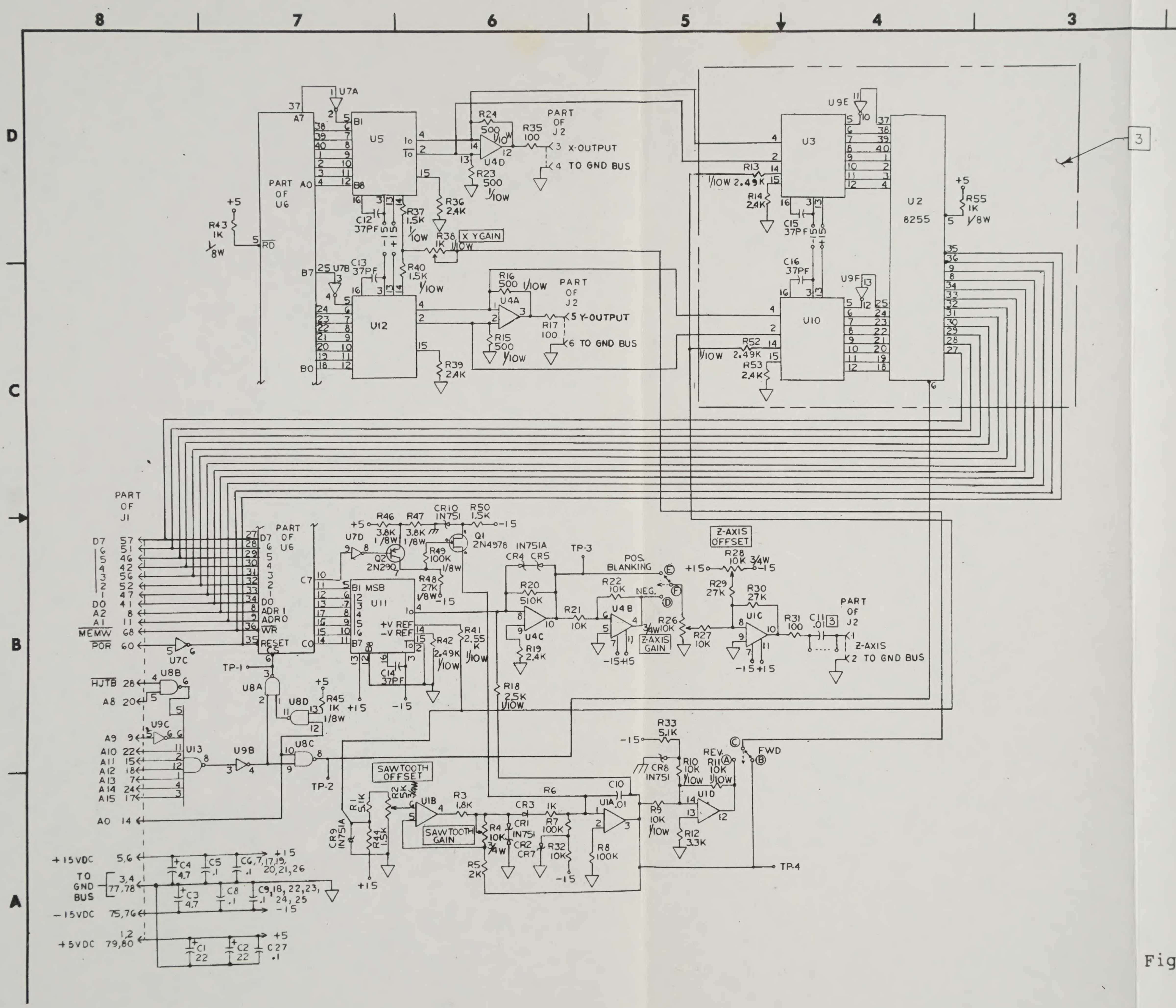
MICROCIRCUIT IDENT				
REF DES	TYPE	+5V	GND	SPARES
U1,4	4136M	14	7	
U2,6	8255	26	7	
U3, 5, 10 U11, 12	DAC-08	–	1	
U7, 9	54LS04J	14	7	U7E,F U9A,D
U13	54L30J	14	7	

NOTES: UNLESS OTHERWISE SPECIFIED

1. RESISTANCE VALUES ARE IN OHMS ± 5 %, 1/4 WATT.
2. CAPACITANCE VALUES ARE IN µF.

3 USED ON -2CONFIGURATION ONLY.

Figure 7-15. X-Y Interface CCA A13 Schematic Diagram (Sheet 1 of 2)


8
7
6
5
4
3
2
1
D
C
B
A
U7A
U5
U12
U4D
U4A
R24 500
R35 100
PART OF J2
3 X-OUTPUT
4 TO GND BUS
R23 500 1/10W
R36 2.4K
R37 1.5K
C12 37PF
R38 1K 1/10W
X YGAIN
R40 1.5K 1/10W
C13 37PF
U7B
R16 500 1/10W
R17 100
5 Y-OUTPUT
6 TO GND BUS
R15 500 1/10W
R39 2.4K
PART OF U6
R43 1K 1/8W
U9E
U3
U10
U2 8255
R13 1/10W 2.49K
R14 2.4K
C15 37PF
C16 37PF
U9F
R52 2.49K 1/10W
R53 2.4K
R55 1K 1/8W
+5
3
PART OF J1
D7 57
6 51
5 46
4 42
3 56
2 52
1 47
D0 41
A2 8
A1 11
MEMW 68
POR 60
HJTB 28
A8 20
A9 9
A10 22
A11 15
A12 18
A13 7
A14 24
A15 17
A0 14
U7C
U8B
U8A
U8D
U9C
U13
U9B
U8C
TP-1
TP-2
PART OF U6
U7D
Q2 2N2907
R46 3.8K 1/8W
R47 3.8K 1/8W
CR10 IN751
R50 1.5K
Q1 2N4978
R49 100K 1/8W
R48 27K 1/8W
U11
+V REF
-V REF
C14 37PF
R41 2.55K 1/10W
R42 2.49K 1/10W
R45 1K 1/8W
IN751A CR4 CR5
R20 510K
U4C
R19 2.4K
R18 2.5K 1/10W
TP-3
POS. BLANKING
NEG.
R22 10K
R21 10K
U4B
R26 10K 3/4W
Z-AXIS GAIN
Z-AXIS OFFSET
R28 10K 3/4W
R29 27K
R30 27K
R27 10K
U1C
R31 100
C11 .01
1 Z-AXIS
2 TO GND BUS
R33 5.1K
CR8 IN751
R10 10K 1/10W
R11 10K 1/10W
REV.
FWD
U1D
R9 10K 1/10W
R12 3.3K
TP-4
SAWTOOTH OFFSET
SAWTOOTH GAIN
R1 5.1K
R2 1K
U1B
R3 1.8K
R4 10K 3/4W
CR1 IN751
CR2
CR3
CR7
R5 2K
R6
R7 100K
R32 10K
C10
U1A .01
R8 100K
CR9 IN751A
R44 1.5K
+15VDC 5,6
TO GND BUS 3,4 77,78
-15VDC 75,76
+5VDC 1,2 79,80
C4 4.7
C5 .1
C6,7,17,19, 20,21,26 .1
C3 4.7
C8 .1
C9,18,22,23, 24,25 .1
C1 22
C2 22
C27 .1
+15
-15
+5

HIGHEST REFERENCE DESIGNATIONS						
C27	CR10	J2	Q2	R55	TP4	U13
REFERENCE DESIGNATIONS NOT USED						
				R25, 34,		
				R51, R54		

MICROCIRCUIT IDENT				
REF DES.	TYPE	+5V	GND	SPARES
U1, 4	4136M	14	7	
U2, 6	8255	26	7	
U3, 5, 10 U11, 12	DAC-08	–	1	
U7, 9	54LS04J	14	7	U7E, F U9A, D
U13	54L30J	14	7	

NOTES: UNLESS OTHERWISE SPECIFIED

1. RESISTANCE VALUES ARE IN OHMS ± 5%, 1/4 WATT.
2. CAPACITANCE VALUES ARE IN µF.

3 USED ON -2CONFIGURATION ONLY.

Figure 7-15. X-Y Interface CCA A13 Schematic Diagram (Sheet 1 of 2)

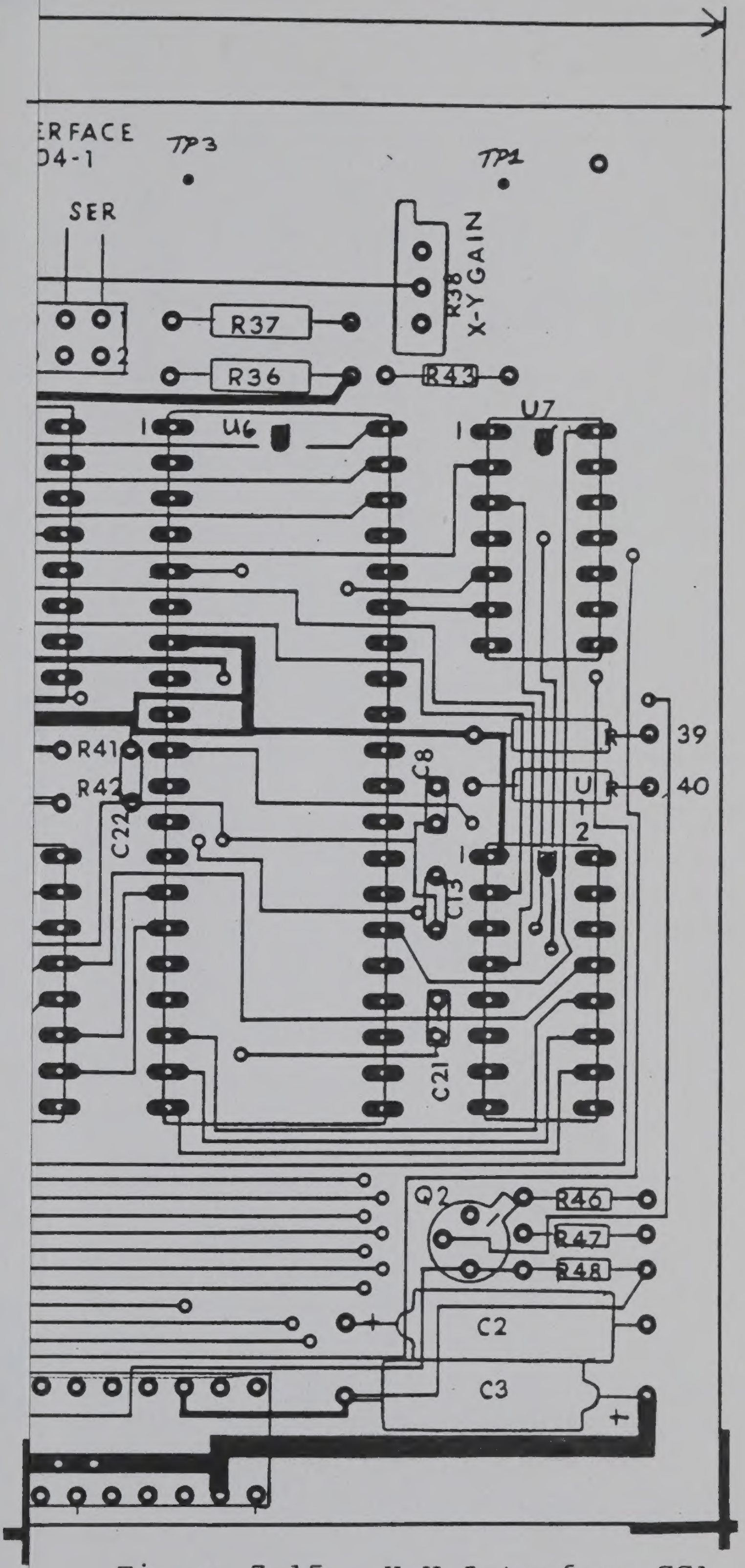

ERFACE
J4-1
TP3
TP1
SER
R37
R36
R43
R38
X-Y GAIN
U6
U7
1
2
R41
R42
C22
C8
C13
C21
U
2
39
40
Q2
R46
R47
R48
C2
C3
+

Figure 7-15. X-Y Interface CCA A13 Schematic Diagram (Sheet 2 of 2)

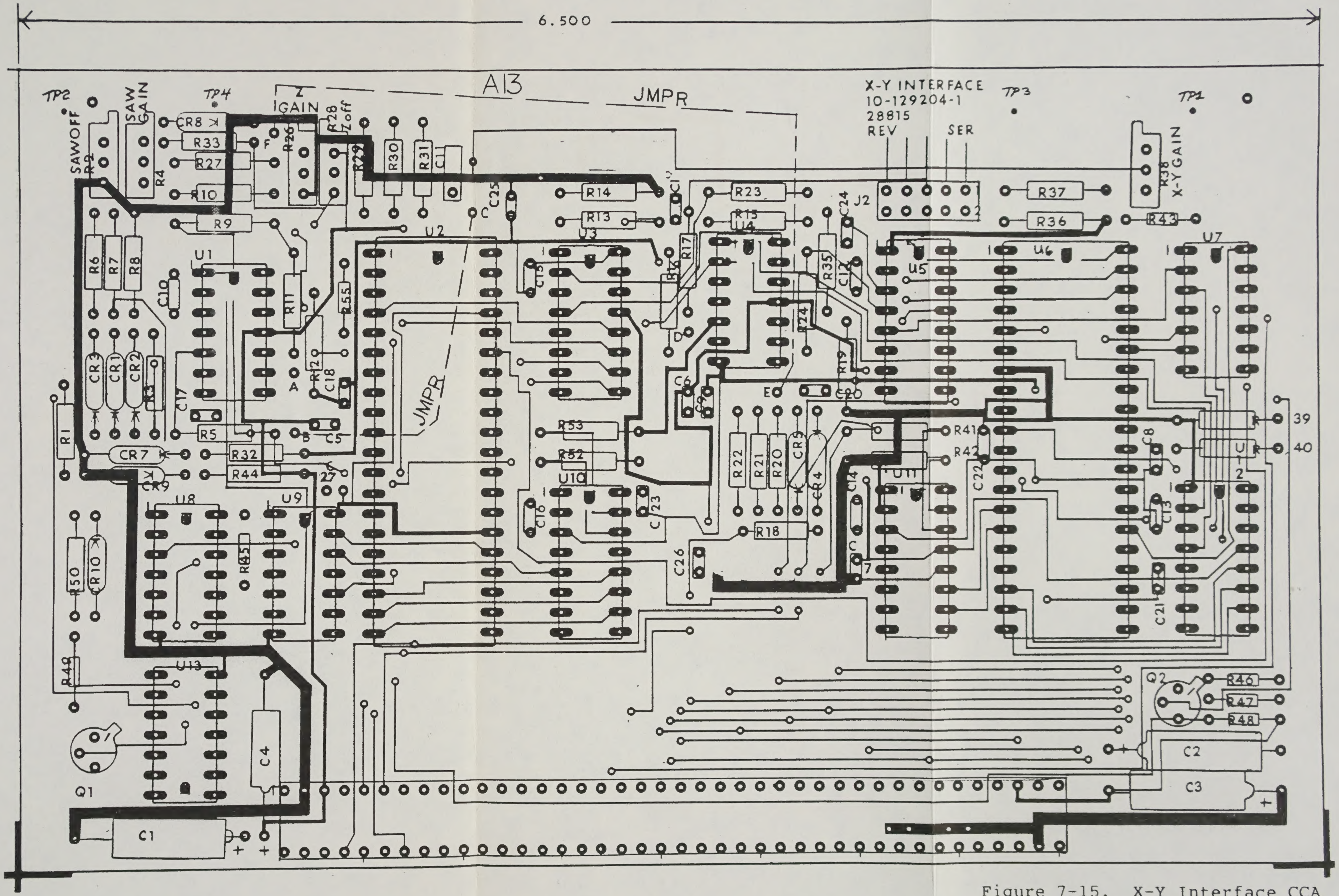

6.500
A13
JMPR
X-Y INTERFACE
10-129204-1
28815
REV
SER
TP1
TP2
TP3
TP4
SAWOFF R2
SAW GAIN R4
Z IGAIN R26
R28 Zoff
R38 X-Y GAIN
J2
U1
U2
U3
U4
U5
U6
U7
U8
U9
U10
U11
U13
Q1
Q2
C1
C2
C3
C4
39
40

Figure 7-15. X-Y Interface CCA A13 Schematic Diagram (Sheet 2 of 2)

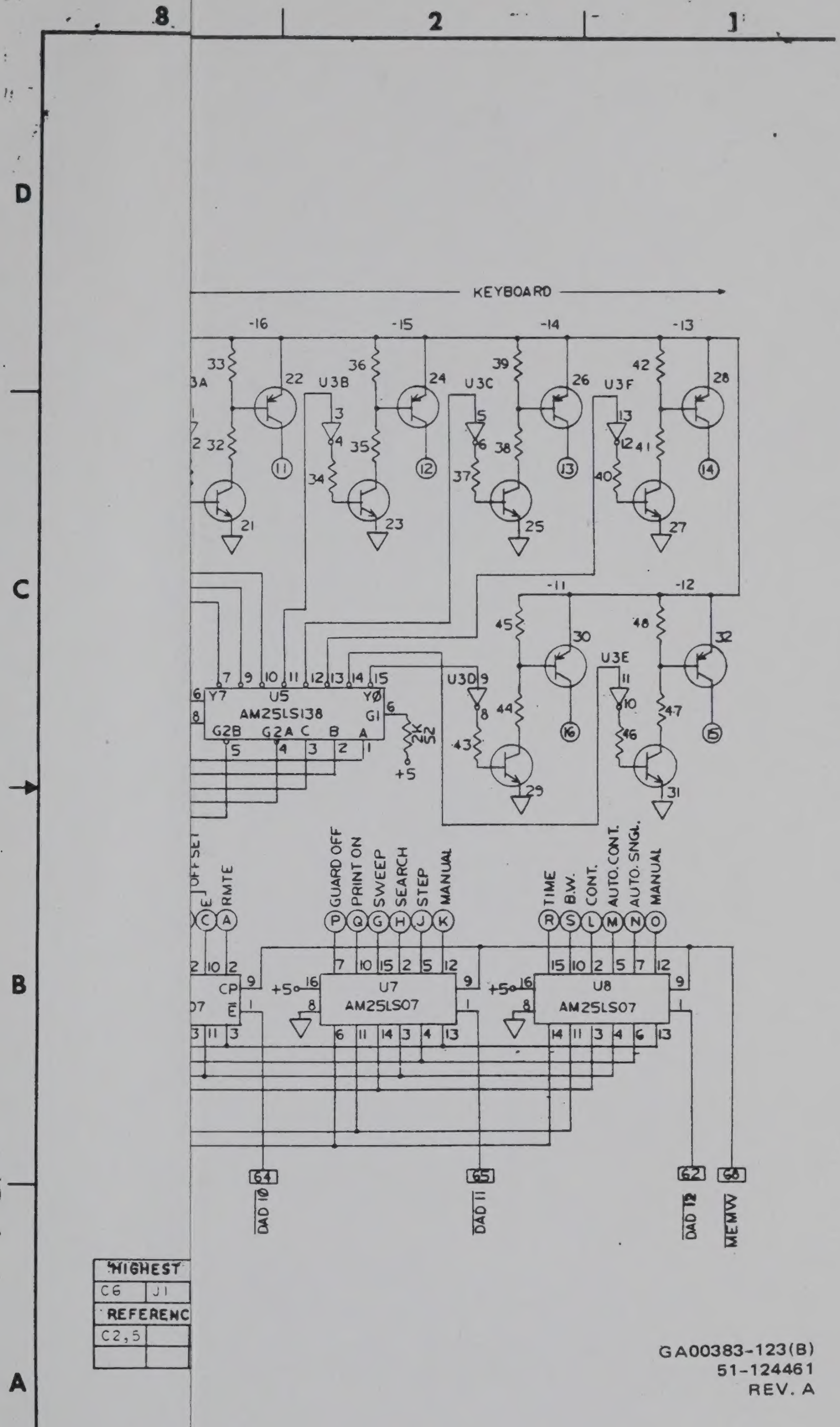
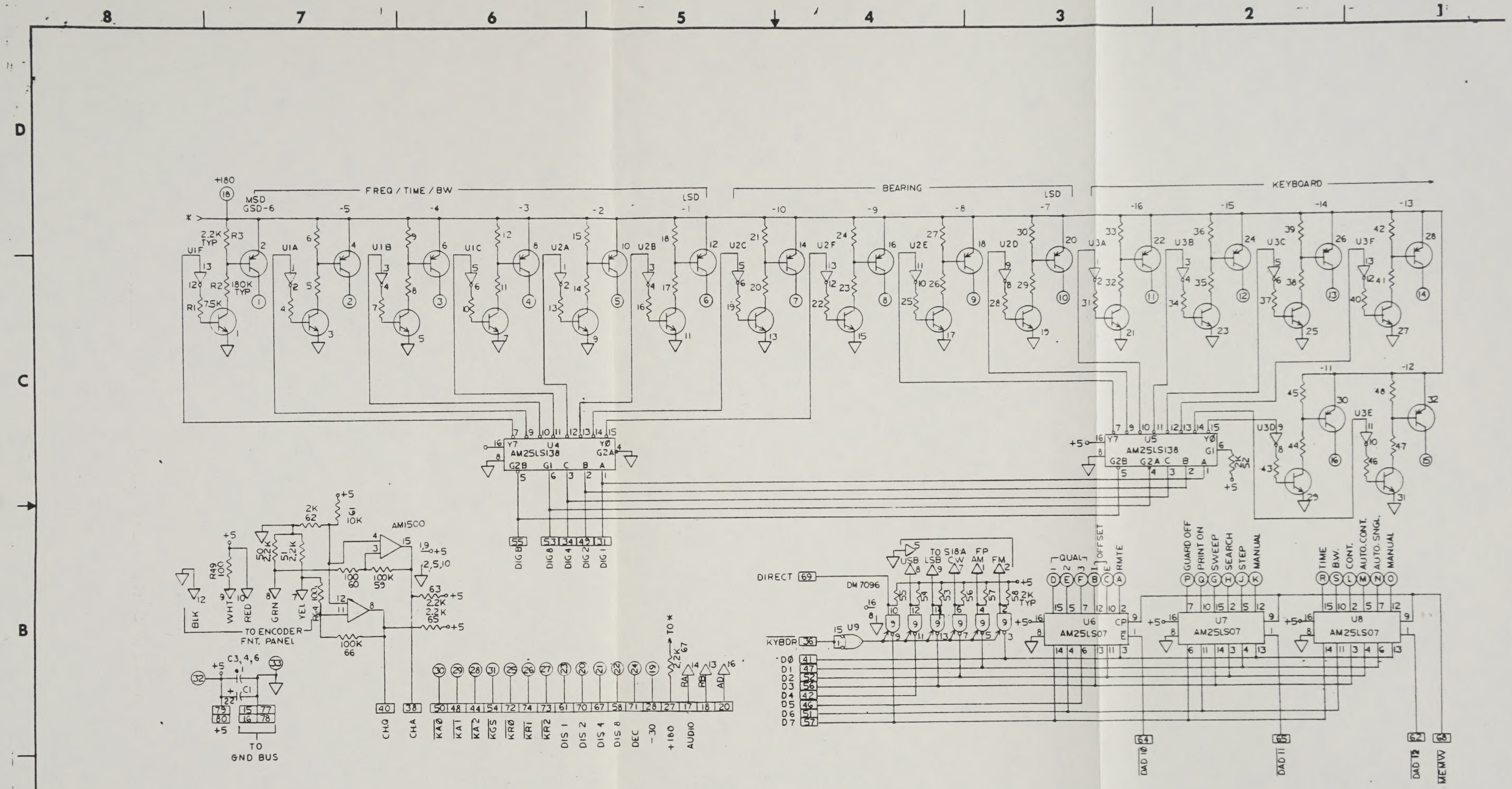

8
2
1
D
C
B
A
KEYBOARD
-16
-15
-14
-13
-11
-12
U3B
U3C
U3F
U3D
U3E
U5
AM25LS138
Y7
YØ
G1
G2B
G2A
C
B
A
+5
U7
AM25LS07
U8
AM25LS07
+5
CP
E
OFFSET
RMTE
GUARD OFF
PRINT ON
SWEEP
SEARCH
STEP
MANUAL
TIME
B.W.
CONT.
AUTO. CONT.
AUTO. SNGL.
MANUAL
64
DAD 10
65
DAD 11
62
DAD 12
66
MEMW
HIGHEST
C6
J1
REFERENC
C2,5
GA00383-123(B)
51-124461
REV. A

Figure 7-17. Front Panel Control CCA A1A2 Schematic Diagram (Sheet 1 of 2)


8
7
6
5
4
3
2
1
D
C
B
FREQ / TIME / BW
BEARING
KEYBOARD
MSD
GSD-6
LSD
+180
U1F
U1A
U1B
U1C
U2A
U2B
U2C
U2F
U2E
U2D
U3A
U3B
U3C
U3F
U3E
U3D
U4
AM25LS138
U5
AM25LS138
U6
AM25LS07
U7
AM25LS07
U8
AM25LS07
U9
AM1500
DM 7096
DIRECT
KYBDR
TO S18A FP
USB LSB CW AM FM
QUAL
OFFSET
RMTE
GUARD OFF
PRINT ON
SWEEP
SEARCH
STEP
MANUAL
TIME
B.W.
CONT.
AUTO. CONT.
AUTO. SNGL.
MANUAL
DIG B
DIG 8
DIG 4
DIG 2
DIG 1
TO ENCODER FNT. PANEL
BLK
WHT
RED
GRN
YEL
CHØ
CHA
KAØ
KA1
KA2
KGS
KRØ
KR1
KR2
DIS 1
DIS 2
DIS 4
DIS 8
DEC
-30
+180
AUDIO
D0
D1
D2
D3
D4
D5
D6
D7
DAD 10
DAD 11
DAD 12
MEMW
TO GND BUS
C3,4,6
C1

HIGHEST REFERENCE DESIGNATIONS				
C6	J1	Q32	R67	U10
REFERENCE DESIGNATIONS NOT USED				
C2,5				

NOTES: UNLESS OTHERWISE SPECIFIED

1. RESISTANCE VALUES ARE IN OHMS ± 5%, 1/8 WATT.
2. CAPACITANCE VALUES ARE IN µF.
3. USE IN CONJUNCTION WITH FIGURE 7-1.

▭ MOTHER BRD. CONNECTION

○ INTER BRD. CONNECTION

▷ HARD WIRE CONNECTION 20PIN CONNECTION ON MOTHER BRD. TO FRNT. PANEL THRU CONNECTOR

GA00383-123(B)
51-124461
REV. A

Figure 7-17. Front Panel Control CCA A1A2 Schematic Diagram (Sheet 1 of 2)

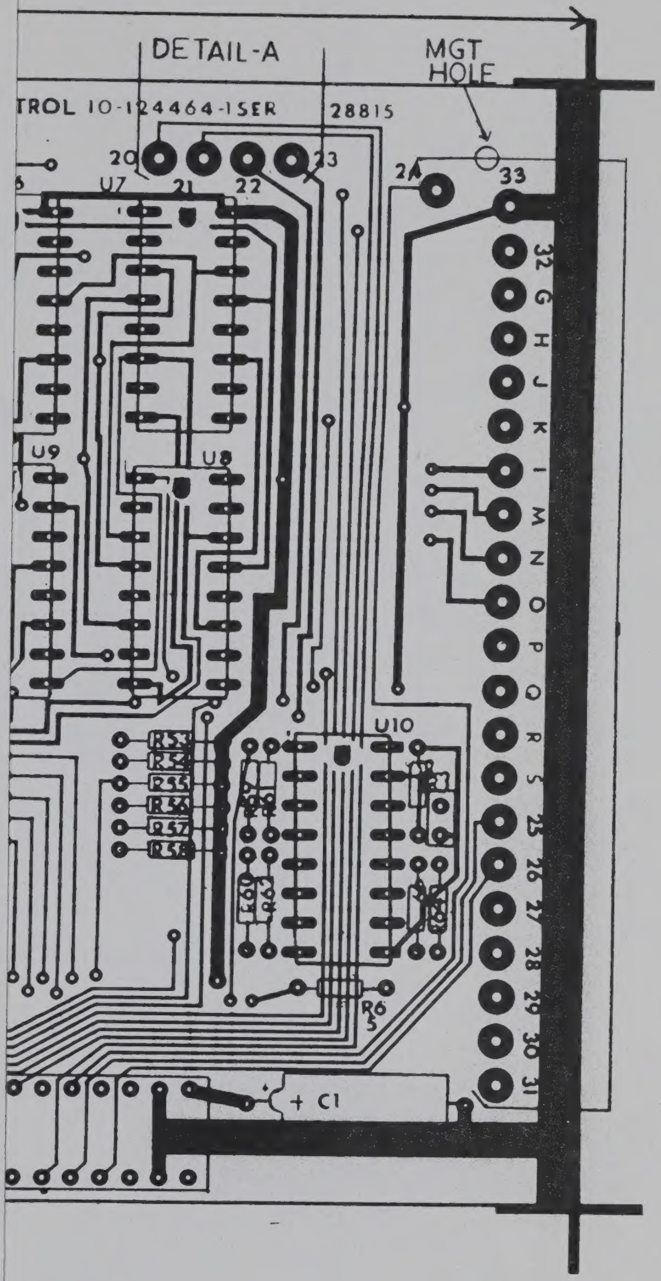

DETAIL-A
MGT HOLE
TROL 10-124464-1SER
28815
20
21
22
23
24
33
U7
U9
U8
U10
R53
R54
R55
R56
R57
R58
R65
+ C1
32
G
H
J
K
L
M
N
O
P
Q
R
S
25
26
27
28
29
30
31

Figure 7-17. Front Panel Control CCA A1A2 Schematic Diagram (Sheet 2 of 2)

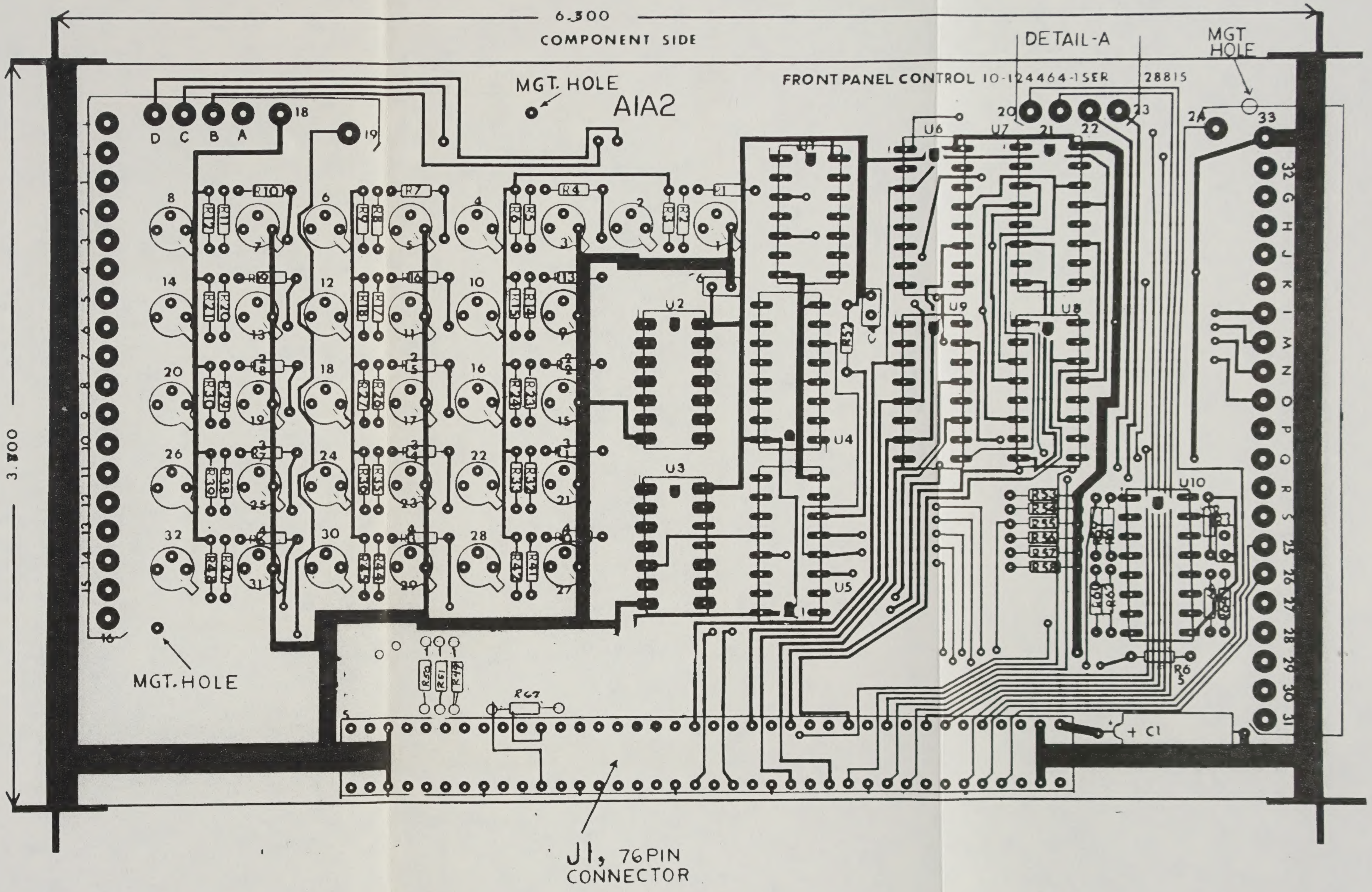

6.300
COMPONENT SIDE
DETAIL-A
MGT HOLE
FRONT PANEL CONTROL 10-124464-1SER
28815
MGT. HOLE
A1A2
3.800
D
C
B
A
U1
U2
U3
U4
U5
U6
U7
U8
U9
U10
C1
MGT. HOLE
J1, 76PIN CONNECTOR

Figure 7-17. Front Panel Control CCA A1A2 Schematic Diagram (Sheet 2 of 2)

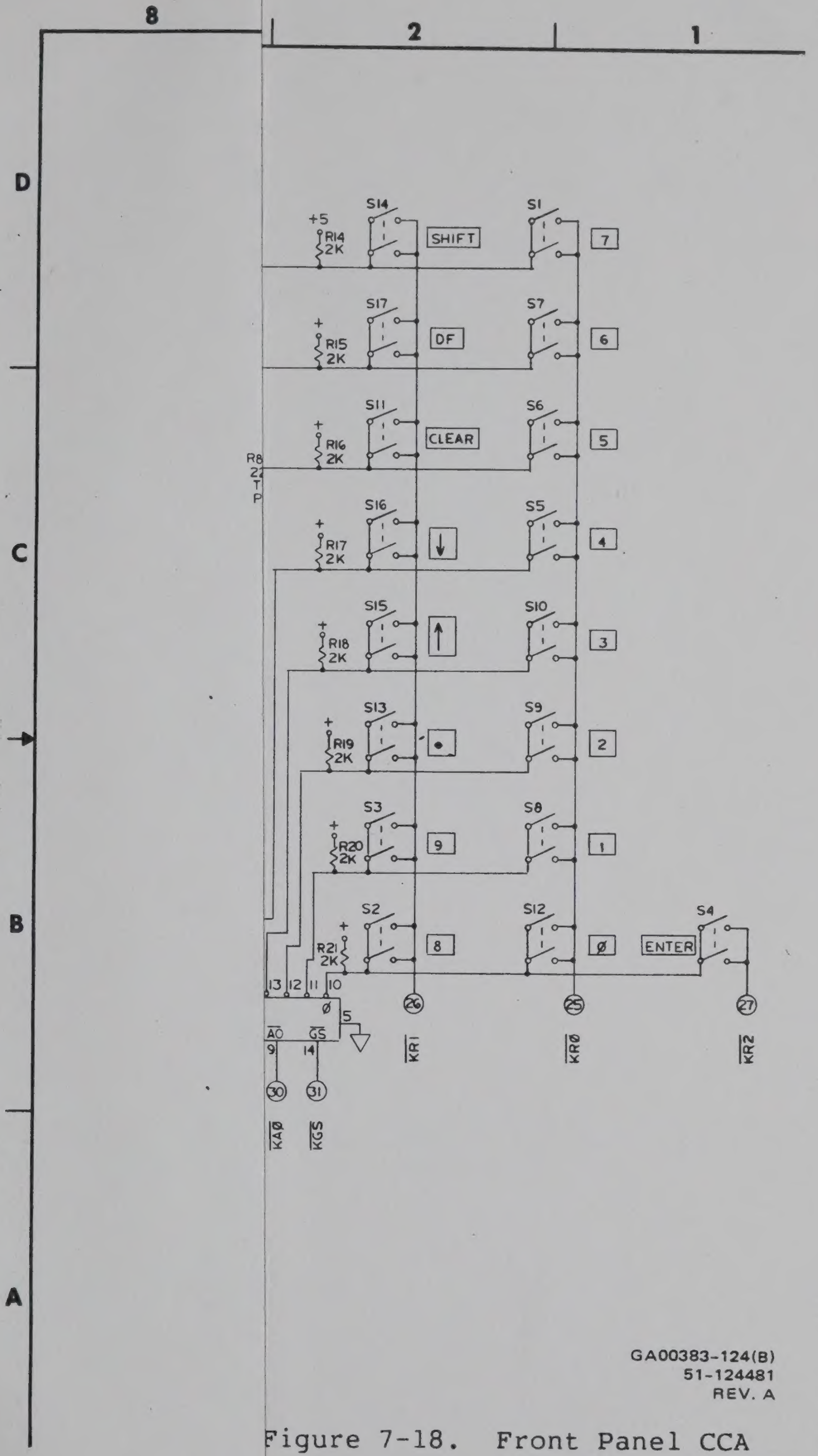
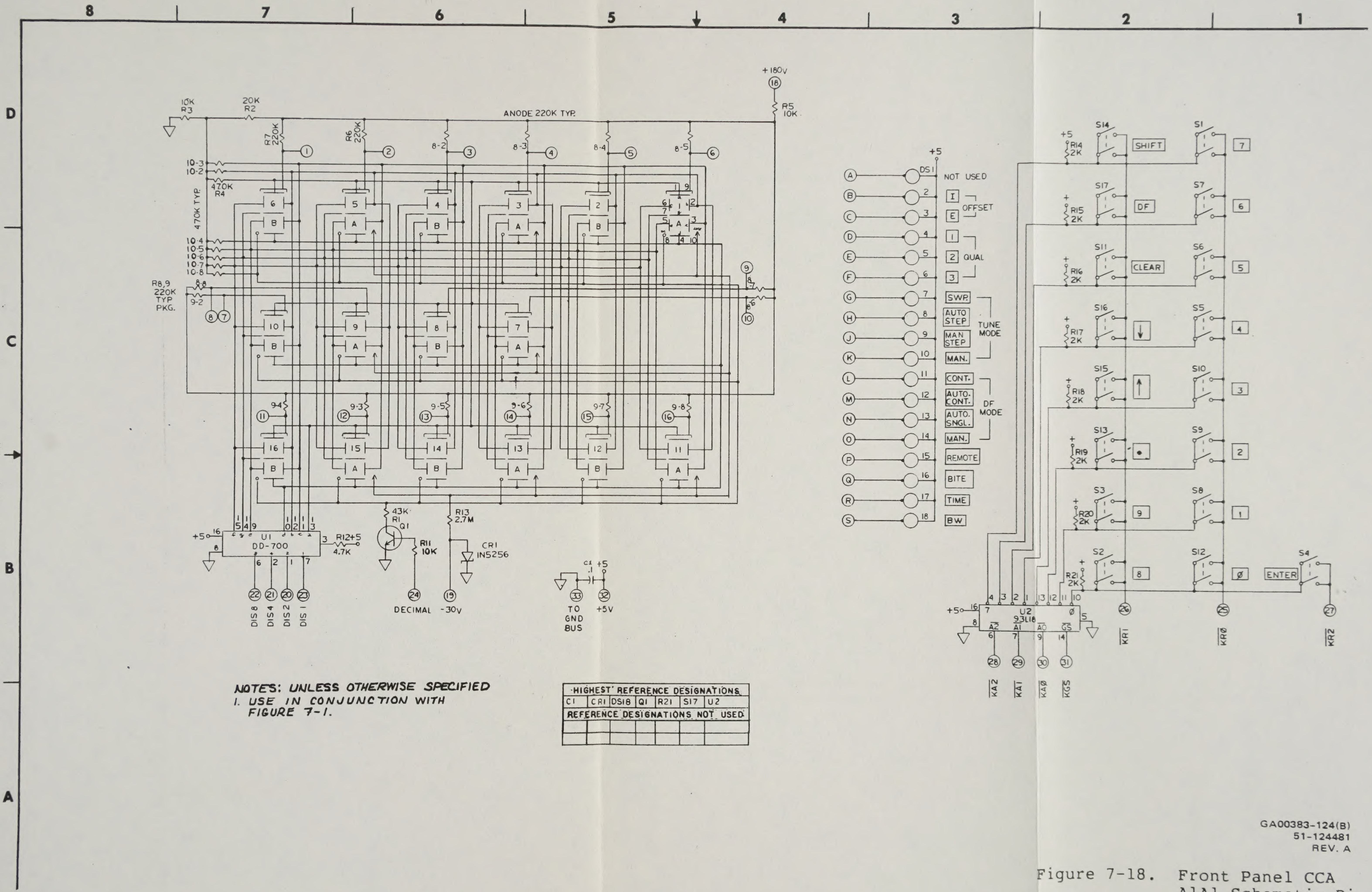

8
2
1
D
C
B
A
S14
+5
R14
2K
SHIFT
S1
7
S17
+
R15
2K
DF
S7
6
S11
+
R16
2K
CLEAR
S6
5
R8
2
T
P
S16
+
R17
2K
S5
4
S15
+
R18
2K
S10
3
S13
+
R19
2K
S9
2
S3
+
R20
2K
9
S8
1
S2
+
R21
2K
8
S12
0
ENTER
S4
13
12
11
10
0
5
A0
GS
9
14
26
25
27
KR1
KR0
KR2
30
31
KA0
KGS
GA00383-124(B)
51-124481
REV. A

Figure 7-18. Front Panel CCA A1A1 Schematic Diagram (Sheet 1 of 2)


8
7
6
5
4
3
2
1
D
C
B
A
10K R3
20K R2
ANODE 220K TYP.
+180V
R5 10K
R7 220K
R6 220K
470K TYP.
470K R4
R8,9 220K TYP PKG.
U1 DD-700
R12 4.7K
43K R1
Q1
R11 10K
R13 2.7M
CR1 1N5256
DIS 8
DIS 4
DIS 2
DIS 1
DECIMAL
-30V
TO GND BUS
+5V
C1 .1
DS1
NOT USED
OFFSET
QUAL
SWR
AUTO STEP
MAN STEP
MAN.
TUNE MODE
CONT.
AUTO. CONT.
AUTO. SNGL.
DF MODE
REMOTE
BITE
TIME
BW
SHIFT
DF
CLEAR
ENTER
U2 93L18
KR1
KR0
KR2
KA2
KA1
KA0
KGS
R14 2K
R15 2K
R16 2K
R17 2K
R18 2K
R19 2K
R20 2K
R21 2K

NOTES: UNLESS OTHERWISE SPECIFIED
1. USE IN CONJUNCTION WITH FIGURE 7-1.

HIGHEST REFERENCE DESIGNATIONS						
C1	CR1	DS18	Q1	R21	S17	U2
REFERENCE DESIGNATIONS NOT USED						

GA00383-124(B)
51-124481
REV. A

Figure 7-18. Front Panel CCA A1A1 Schematic Diagram (Sheet 1 of 2)

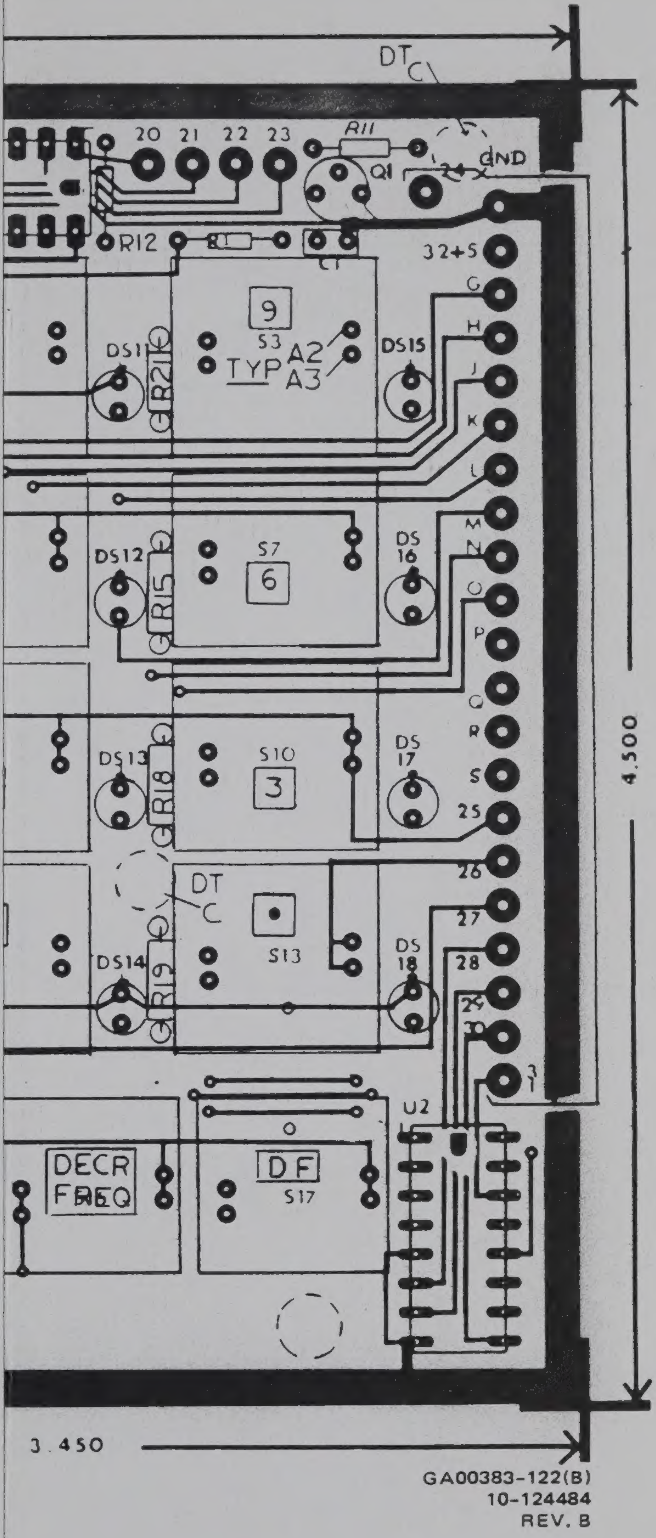

DT C
20
21
22
23
R11
Q1
24
GND
R12
C1
32+5
G
H
J
K
L
M
N
O
P
Q
R
S
25
26
27
28
29
30
31
9
S3
TYP A2 A3
DS11
R21
DS15
DS12
R15
S7
6
DS 16
DS13
R18
S10
3
DS 17
DT C
S13
DS14
R19
DS 18
U2
DECR FREQ
DF
S17
4.500
3.450
GA00383-122(B)
10-124484
REV. B

Figure 7-18. Front Panel CCA A1A1 Schematic Diagram (Sheet 2 of 2)

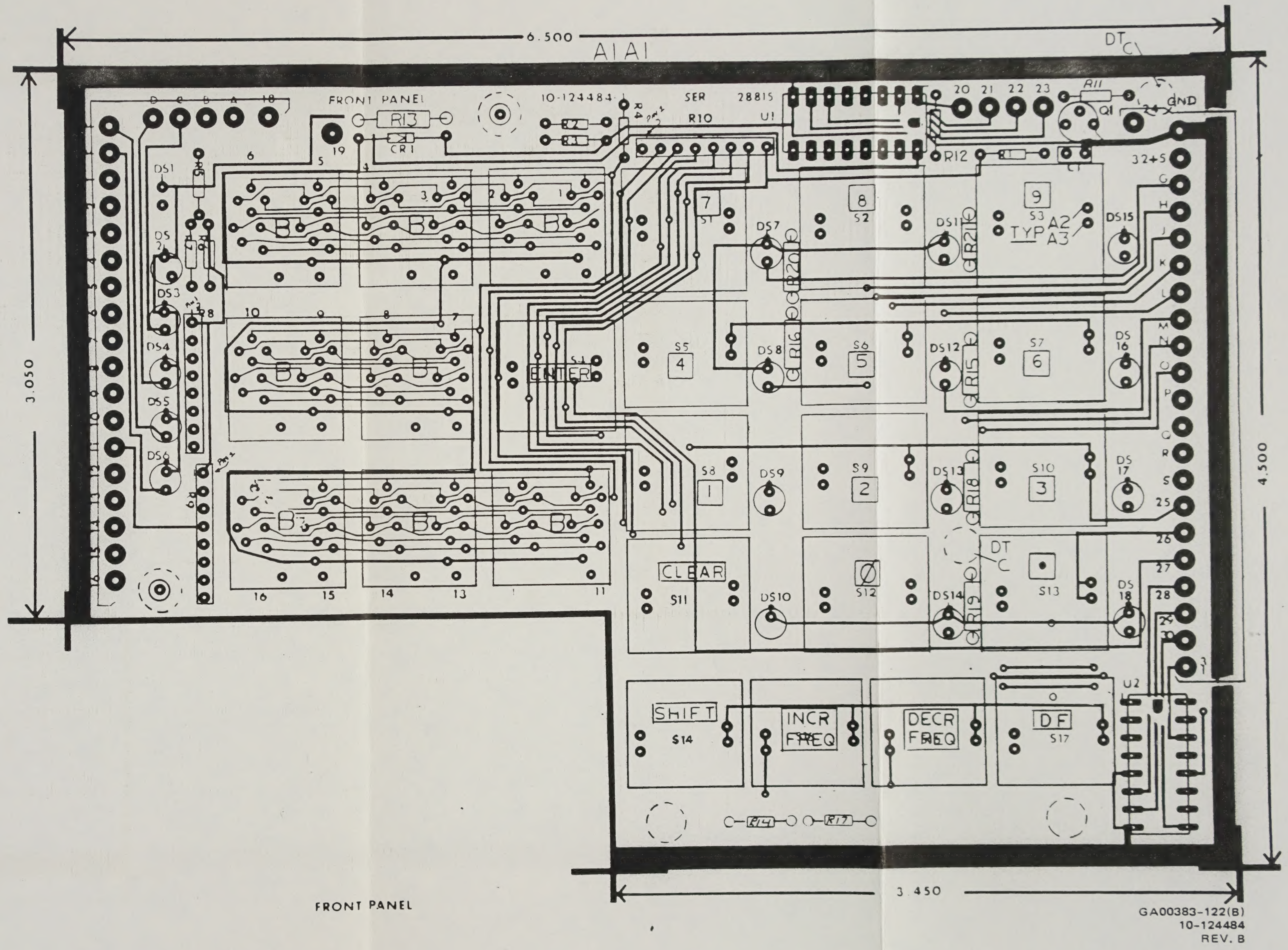

6.500
A1A1
DT C
FRONT PANEL
R13
CR1
10-124484-1
SER 28815
R10
U1
R4
20 21 22 23
R11
Q1
GND
R12
C1
32+5
DS1
DS2
DS3
DS4
DS5
DS6
DS7
DS8
DS9
DS10
DS11
DS12
DS13
DS14
DS15
DS16
DS17
DS18
R15
R16
R18
R19
R20
R21
S1
S2
S3
S5
S6
S7
S8
S9
S10
S11
S12
S13
S14
S17
7
8
9
4
5
6
1
2
3
Ø
TYP A2 A3
ENTER
CLEAR
SHIFT
INCR FREQ
DECR FREQ
DF
U2
R14
R17
3.050
4.500
3.450
FRONT PANEL
GA00383-122(B)
10-124484
REV. B

Figure 7-18. Front Panel CCA A1A1 Schematic Diagram (Sheet 2 of 2)

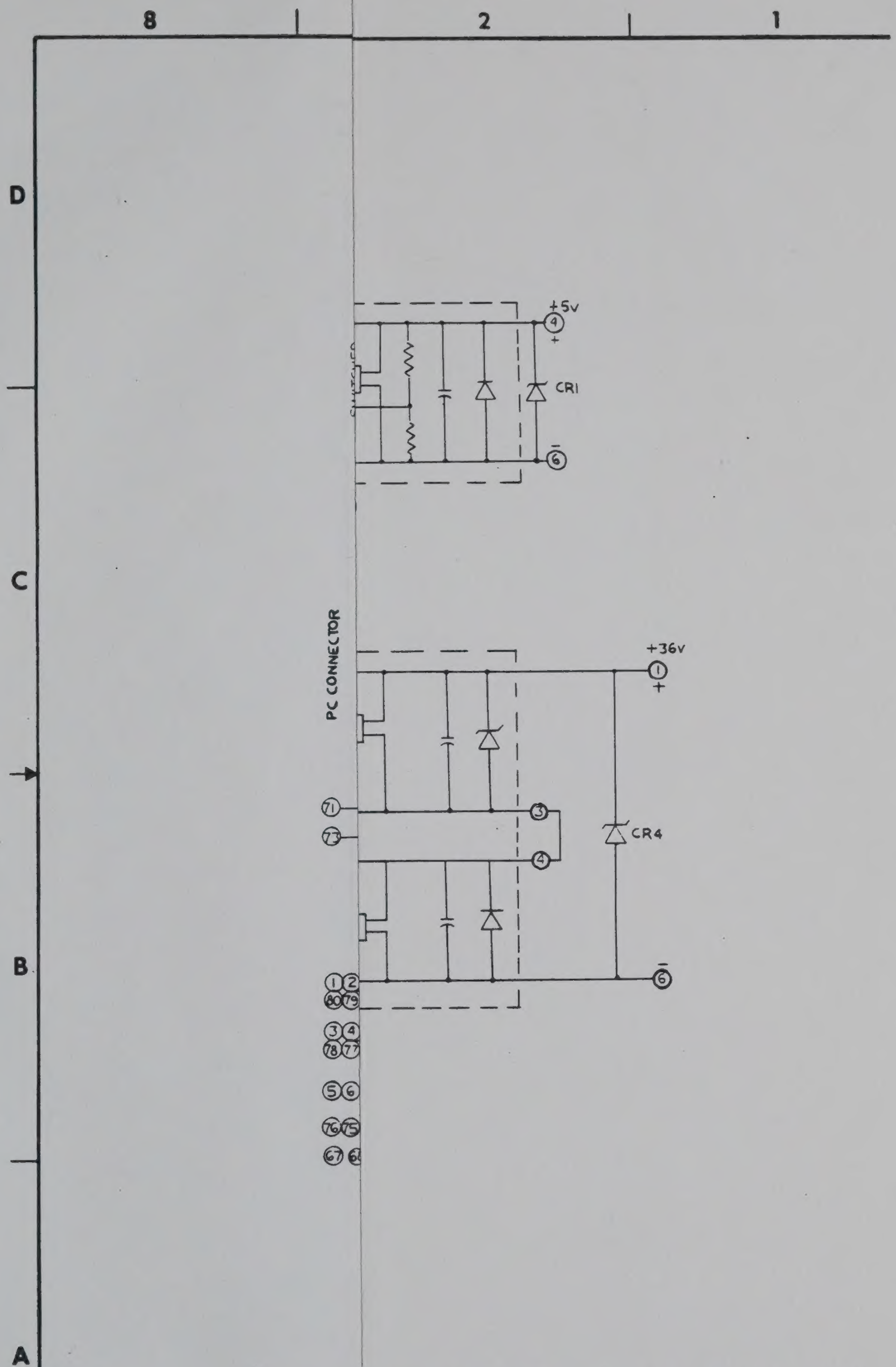

8
2
1
D
C
B
A
+5v
4
+
CR1
6
PC CONNECTOR
+36v
1
+
71
73
3
4
CR4
6
1
2
80
79
3
4
78
77
5
6
76
75
67

Figure 7-19. Power Supply CCA A25 Schematic Diagram (Sheet 1 of 2)

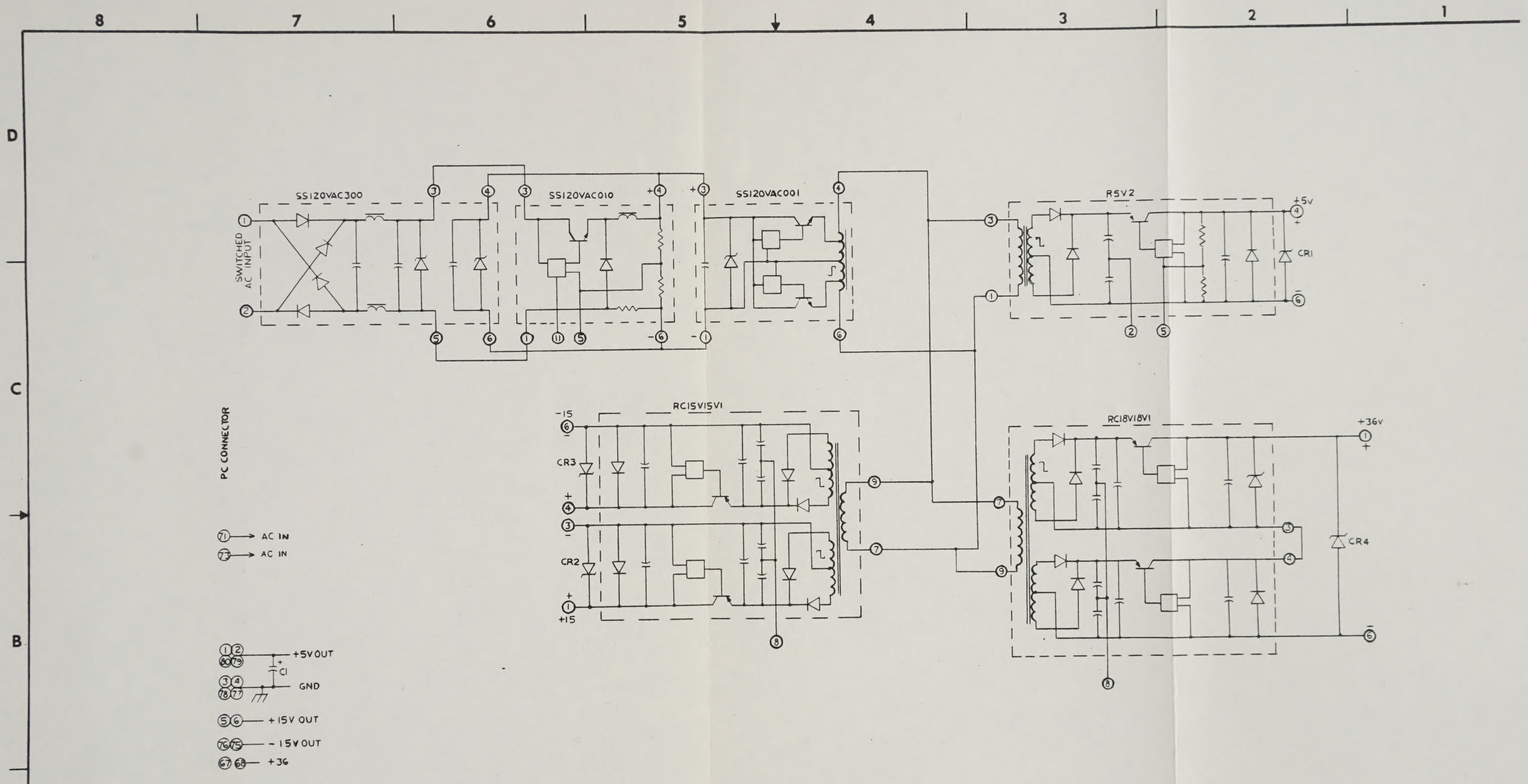

8
7
6
5
4
3
2
1
D
C
B
SS120VAC300
SWITCHED AC INPUT
SS120VAC010
SS120VAC001
R5V2
+5v
CR1
RC15V15V1
-15
CR3
CR2
+15
RC18V18V1
+36v
CR4
PC CONNECTOR
AC IN
AC IN
+5V OUT
C1
GND
+15V OUT
-15V OUT
+36

Figure 7-19. Power Supply CCA A25 Schematic Diagram (Sheet 1 of 2)

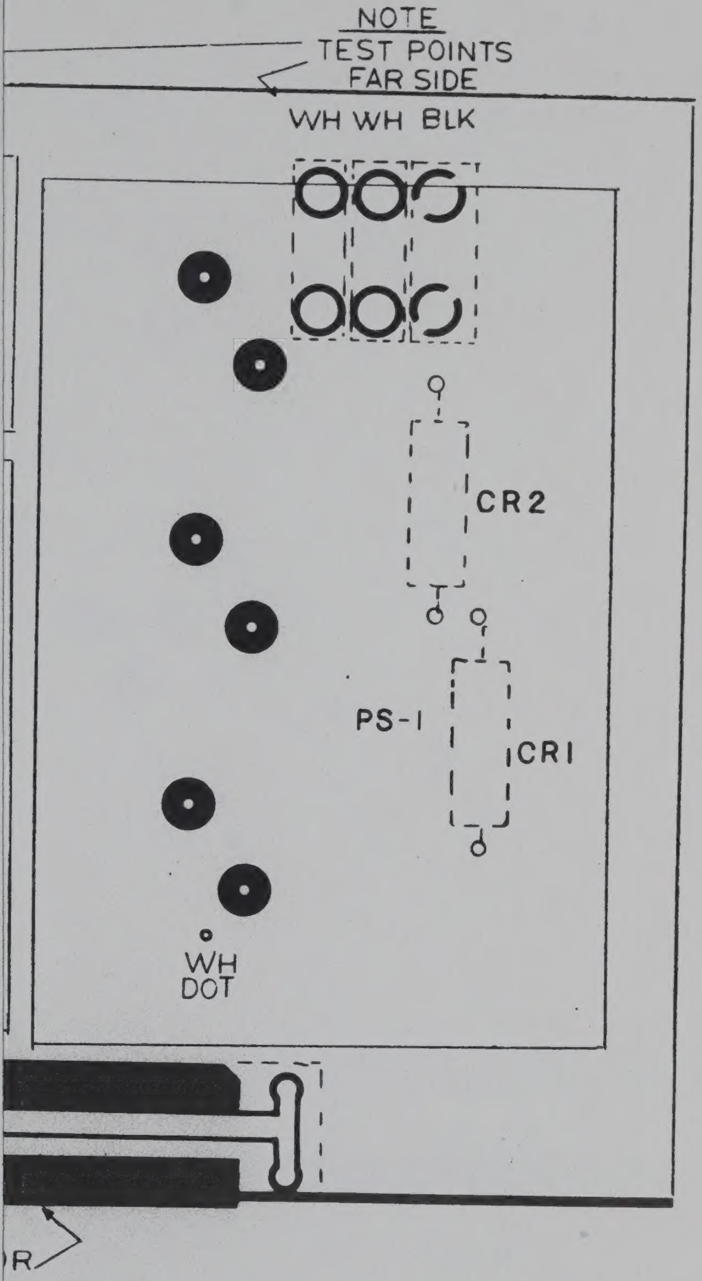

NOTE
TEST POINTS
FAR SIDE
WH WH BLK
CR2
PS-1
CR1
WH
DOT
R

Figure 7-19. Power Supply CCA A25 Schematic Diagram (Sheet 2 of 2)

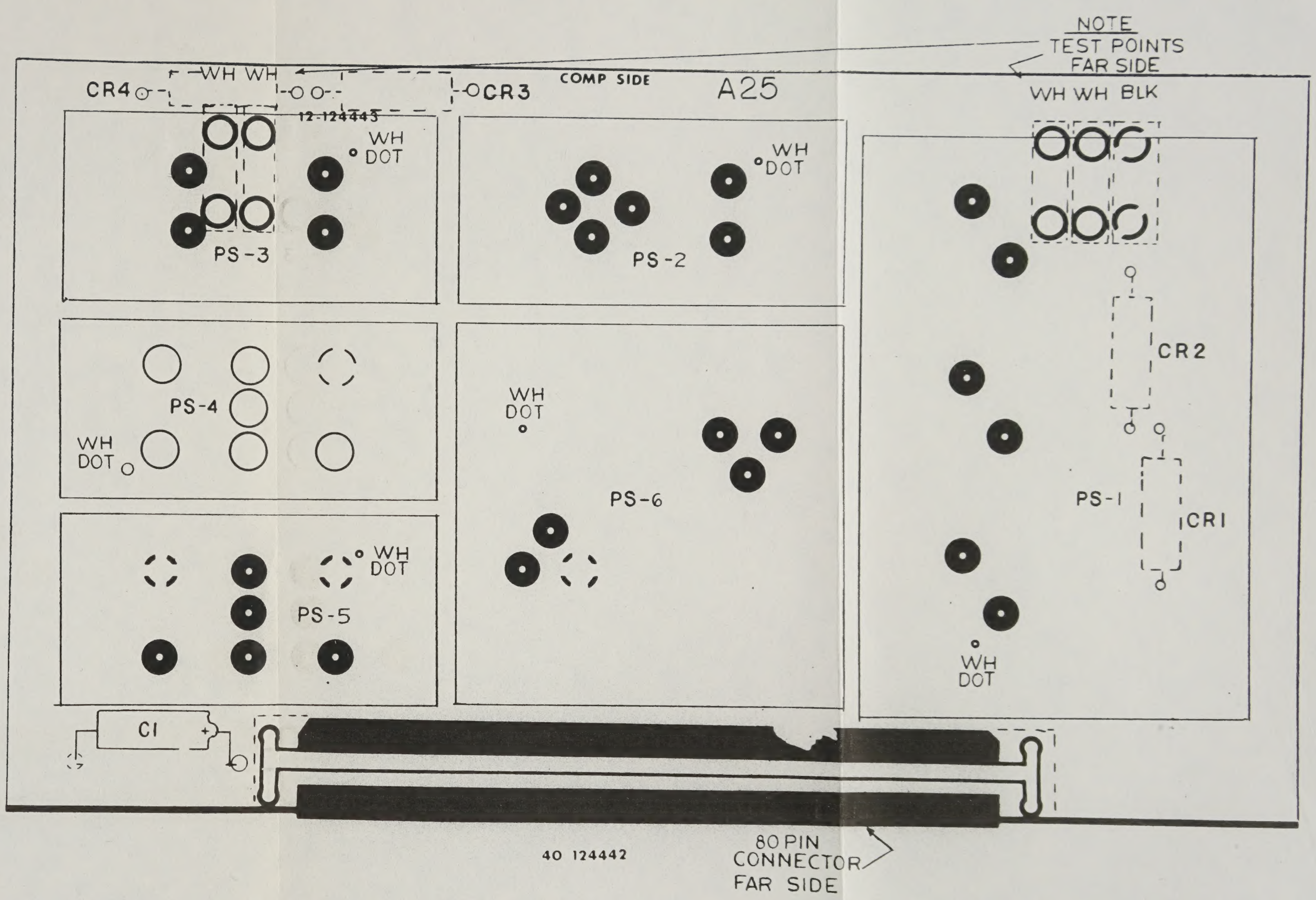

NOTE
TEST POINTS
FAR SIDE
CR4
WH WH
12-124443
CR3
COMP SIDE
A25
WH WH BLK
WH
DOT
PS-3
WH
DOT
PS-2
PS-4
WH
DOT
WH
DOT
PS-6
CR2
PS-1
CR1
WH
DOT
PS-5
WH
DOT
C1
+
40 124442
80 PIN
CONNECTOR
FAR SIDE

Figure 7-19. Power Supply CCA A25 Schematic Diagram (Sheet 2 of 2)